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ORIGINAL ARTICLES

INTERNAL OR DIRECT SPLINT IN THE TREATMENT OF FRACTURES.*

By Herman E. Pearse, M. D., Kansas City, Mo.

The revelations of the *x*-ray have proven to us what post mortem findings had led us to suspect; we are never, almost never, getting the ends of two bones in good apposition by extension, counter-extension and splints. The work of the masseur has proven that we kept the parts too long immobilized. We too often have had stiff members. These have been the heritage of the old system of "setting" fractures—pain, long loss of use, crooked parts, poor use of mended members, sometimes loss of reputation and occasional damage suits, and the more the *x*-ray is educating the public, the oftner comes the protest against the result.

A large number, perhaps a majority, of the suits filed against doctors are from poor results after fracture "setting."

The following are insurmountable obstacles to exactness and, hence, to perfection of results under the external splint method:

1. It is impossible to see the ends of bone, hence impossible to secure accurate apposition of ends.

2. Breaks are never so exactly transverse as not to slip sidewise upon occasion.

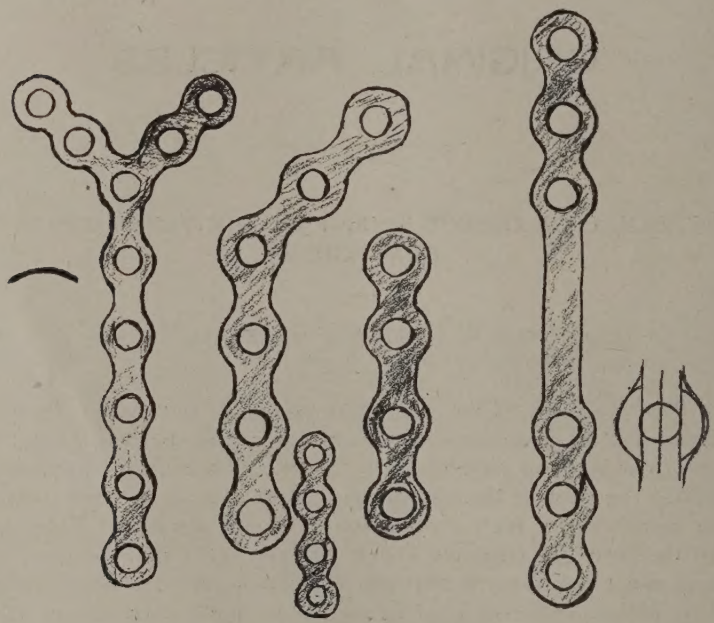
3. Portions of fascia and muscle will become misplaced and engage between the ends of the bone.

*Read in the Surgical Section, Fifty-second Annual Meeting, Missouri State Medical Association, Jefferson City, May, 1909.

4. The hemorrhage from broken bones does not stop until the parts are packed with a blood clot that must be absorbed and whose presence increases the stiffness and uselessness of the mended member.

5. External splints applied over the parts, separated from the actual broken bone by muscle, fat and skin cannot hold the parts in more than indifferent position, and then only by exerting undue pressure upon the soft parts.

6. Too often one fragment of the broken bone is too short to afford proper bearing for the splint and thus maintain the axis of the bone in its proper position.



Forms of splints used in the treatment of fractures.

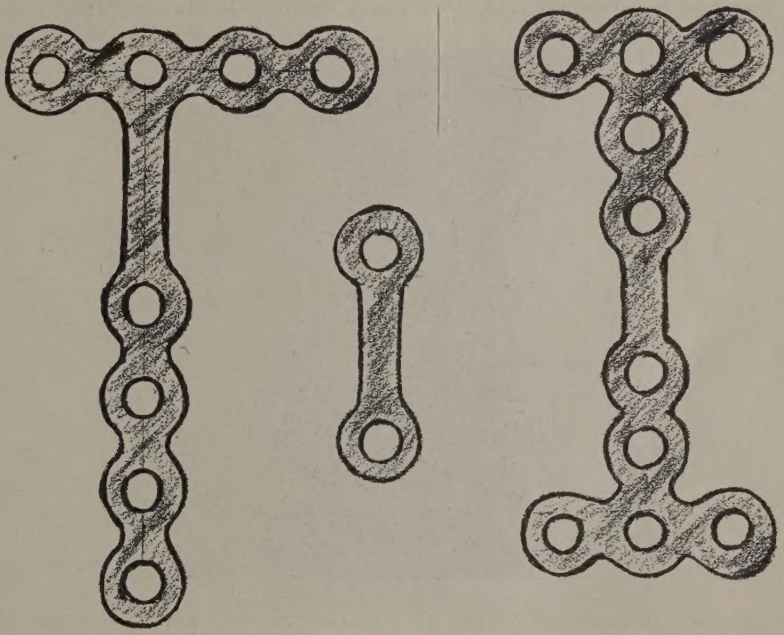
7. Every factor of the external splint process used to maintain apposition, splints, bandages, pressure, extension and rest; all these tell against nutrition.

8. Early motion is the panacea for stiffness and loss of function must be sacrificed to the need for bony apposition.

In view of these reasons for imperfect results, the external splint method has been recognized as faulty, and I am desirous of presenting to you a much better method, which is applicable to all recent fractures whenever perfect aseptic technique can be carried out, *i. e.*—The incision of the soft parts and the application of a steel splint or splice fastened with screws directly to the replaced fragments of the bone in such a

manner as to maintain perfect apposition. If the fragment is a condyle or other projection it can sometimes be simply fastened by screws, nails or staples. In support of these measures I offer the following evidence:

1. Text book, "The Operative Treatment of Fractures."—Lane.
2. Three book articles: "The Modern Treatment of Fractures by Means of Direct Internal Splintage."—International Clinics, Vol. III. "Operative Surgery."—Burghard, Vol. I., page 531-551. "Operative Treative of Simple Fracture."—Lane, Surg. Gyn. and Obs., April, 1909.
3. Observation in hospital practice.
4. Successful cases in my own practice.



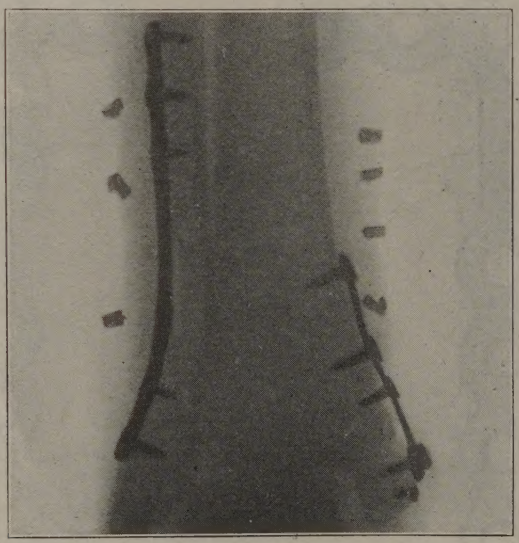
Forms of splints used in the treatment of fractures.

As to number one: The text book is "The Operative Treatment of Fractures," by Wm. Arbuthnot Lane, Esq., F. R. C. S., of London, published by the Medical Publishing Company of London. I quote the following passages from this book:

"The operative treatment of simple fractures is comparatively easy in the majority of cases, and if due care be taken and reasonable skill be exercised the risk is practically nil.

"In certain small proportion of cases the bone may be too friable, too thin, or too much broken up, and the surgeon may therefore be unable to restore it completely to its original form. Even in these circumstances he can almost always obtain a much better result by operating than by any other form of treatment.

"Age is no barrier to operation; indeed, in old people an operation is often more imperatively called for than in vigorous life, for the reason that prolonged recumbency in old age is a very serious matter, often entailing of necessity a fatal result. The shock sustained from surgical interference is trivial, old people bearing operations well. Alcoholic patients, in whom the soft parts about the fracture have been very severely damaged as a result of direct violence, incur more risk from the injury than healthy ones, so it follows that the additional risk consequent on operation in these cases is naturally greater than in the normal subject, not because of the operation but because of the conditions in which the operation is performed. In other words, alcoholism and direct injury to



soft parts increase the danger of fractures and also add to the risk of their operative treatment. I have found the bones of chronic alcoholics to be frequently thin and friable.

"Many complaints have been made by surgeons who have failed to obtain good results by operation. For example, some have said their screws would not hold and others that they could not obtain union. These failures are due to the fact that the very moderate cleanliness necessary to obtain a good result in ordinary operations is quite insufficient to meet that required when a large piece of metal, whether steel or silver, is left buried in the wound.

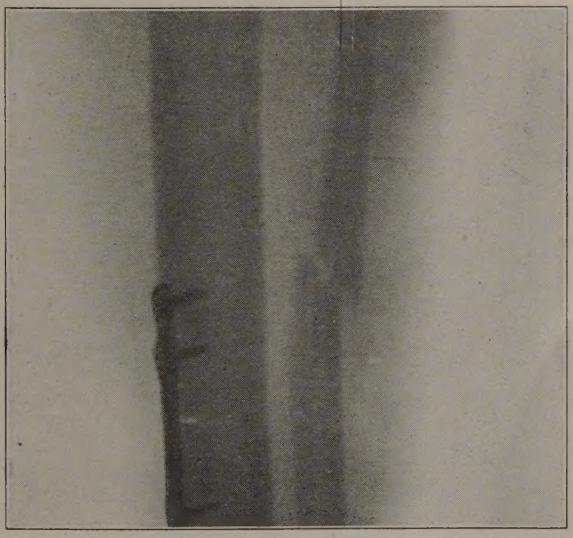
"If the surgeon has not succeeded in such a simple operation as wiring fractures of the patella without killing or permanently disabling many of his patients, he had better bring himself to believe that the results of the generally accepted methods of treatment are excellent, and that any statments to the contrary are exaggerated or imaginary, and leave

operations on recent fractures alone, since they may test the methods and skill of the operator to the utmost.

"In performing these operations, not only must you not touch the interior of the wound with your hands nor permit the patient's skin to do so either, but you must never let any portion of an instrument which has been in contact with your skin or with that of the patient touch the raw surface. All sponges must be held in forceps and applied to the wound in that manner. They should not be handled in any way previous to being used.

"After an instrument has been used for a length of time, or forcible, it should be recalled or placed in a germicidal solution.

"I have occasionally seen beginners employ the handle of a knife or dissecting forceps to separate adherent parts, or to displace some structure,



instead of using the particular instrument made for that purpose. I need not remind you that this must not be done on any pretext whatever.

"It is probably unnecessary to say that no germicidal or other liquid should be introduced into the wound.

"The details of the operation are as follows:

"Get the skin thoroughly clean. This may sometimes take several days, as the thick, indurated epidermis of the foot and knee is often difficult to remove. I find large moist compresses with careful scrapings most effective in enabling one to get rid of suspicious material. When this has been properly done a germicide should be applied to render the skin as clean as possible.

"Choose a situation for your incision which involves a minimum chance of damage to important structures and a maximum advantage from

the point of view of accessibility. Do not hesitate to make the incision of a length sufficient to enable you to deal effectually with the fragments. There is no greater mistake than to exaggerate the difficulties of the operations by employing an incision which is not sufficiently long to permit of easy access to and ready manipulation of the fragments. Its length in no way increases the risk the patient runs, but usually adds to his safety, since it enables the surgeon to deal with the fragments more readily.

"Having made the incision, exclude the skin of the patient from contact with the wound. This can be done effectually by attaching sterile cloths to the cutaneous margins of the incisions by forceps. These are made in several sizes.

"The fragments are exposed and examined, and when all clot and material intervening between them have been removed they are brought into accurate apposition. To do this much traction may be necessary, combined with the leverage action of elevators and the approximating influence of powerful long-handled forceps. The long forceps I employ are very powerful and are made with a limited grasp to facilitate their use.

"If there be any bleeding it is effectually dealt with by strong compression forceps long enough to allow that portion of the handles which have come into contact with the fingers to protrude beyond the areas of the wound. Their grip is sufficiently firm to occlude the vessels if they are kept on for a short time, and so the necessity for a ligature is obviated."

Generally speaking, the screw is far the most efficient and most powerful means by which the fragments can be retained immovably on one another. Remember in gauging the size of the drill you intend to employ in drilling the hole for any particular screw that the calibre of the barrel of the screw is much larger than that of the thread, and that an aperture in dense bone which readily admits the thread may be much too small for the barrel, and if the screw is driven into it the bone may be hopelessly comminuted.

I have arranged with the manufacturers to cut several gross of screws sizes, 4, 6 and 8 and lengths ⅜, ½, ⅝, ¾ and 1 inch with the

screw threads entirely to the head, having no body or barrel at all. The drills and screwdrivers should be of sufficient length to avoid any risk of the fingers touching the wound.

If wire be employed, it should be pure, and before use it should be raised to a red heat in a flame and cooled slowly, by which its flexibility is increased very greatly.

Too much care cannot be taken to bring the edges of the skin together with perfect accuracy, and in performing this part of the operation any infection of the wound by the dissecting forceps must be carefully avoided.

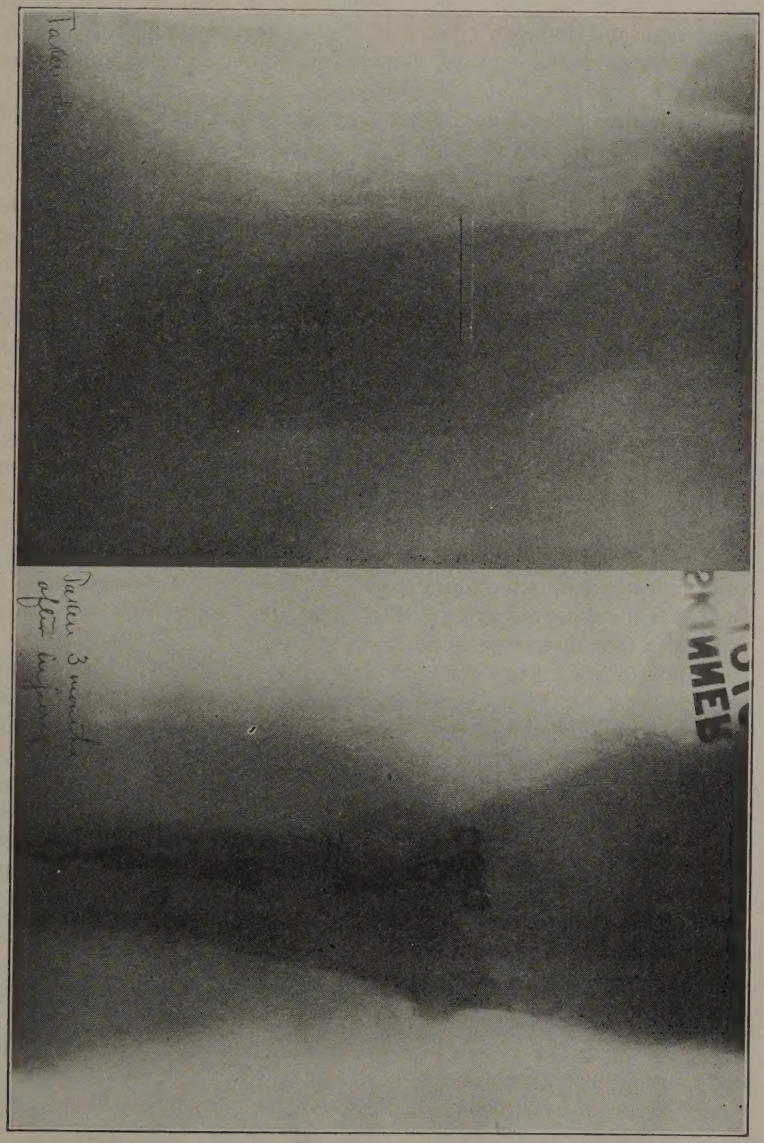
If much oozing is expected, drainage may be employed for a day or two with drainage.

Some form of splint, etc., is usually required after the operation, it may be impossible to employ any support in such circumstances the surgeon should render the junction as secure as possible to meet any possible eventuality.

As to number two, The International Clinics, Vol. III., 1908, published by Lippincott & Co., contains an article by Edred M. Corner, M. G. F. R. C. S. (Eng.), entitled "The Modern Treatment of Fractures by Means of Direct Internal Splintage." I quote as follows from this article:

"The treatment of fractures has always been a department of surgery encompassed with many difficulties—the despair and perhaps the scandal of many practitioners. Of recent years, in particular, the use of skiagraphs has laid bare before the people in general and ourselves in particular, the fact that under the present methods of treatment a broken bone is rarely if ever restored to its original shape. Perhaps a skiagraph taken some time after the fracture is shown to a jury and the medical man forced to pay damages; it may be for no fault of his own. The public have a right to expect a fairly correct diagnosis in a case of fracture; and the use of the *x*-rays is most helpful in arriving at such a diagnosis. It is therefore foolish to neglect such help when it can be obtained; but a man who breaks a bone has no right to expect a perfect result and to complain if he does not regain every ability which he possessed prior to the injury. If he smashes his motor car badly, it may be and usually is impossible to repair it so well that the engine, with no new parts, is as good as if no accident had happened to it.

"First of all, what are the general features of this treatment by splintage? Splints are applied to the outside of the injured part in order to keep it at rest, and to hold the fragments of the broken bone together and in the proper position in which the fragments are to unite. Splints easily accomplish the first condition,—keeping the part at rest. But they are placed along the outside of the limb and are separated from the bones they are to hold in apposition by skin, fat, muscle, extravasated blood, etc. Moreover, the splints cannot be applied tightly without interfering with the blood supply of the part, perhaps cutting it off altogether and causing gangrene. In consequence they must be bandaged on with tightness just short of interfering with the blood supply, with the results that the fragments of the broken bone can move upon each other within the splints. The force of this argument will be appreciated if an attempt is made to fix in good apposition two portions of a broken walking stick inside a pillow by means of splints bound lightly along the outside. The attempt is childish. Splints which are placed along the outside of the limb may be termed external splints. And the method, as the splints are not placed directly on the fragments, may be called indirect splintage. On the whole the clinical results of this rough and inexact methods are good. But, like everything else in this world, the method has its limitations; so that it must not be expected to do everything. Considering the ancient origin and lineage of this method of indirect treatment fo fractures by external


Taken 3 minutes after injection

splints, it is a fair question to ask if modern surgery has devised anything to supplement it. The answer is 'yes.' Modern surgery can supplement it by the method of applying 'splints' directly to the fragments of the broken bone; the splints being internal and the splintage direct instead of external and indirect. So that the ancient method was indirect splintage by means of external splints; and the modern method is direct splintage by means of internal splints.

"Naturally internal and direct splintage can be accomplished only by means of an operation. Hence the modern method is a corollary of the advances of modern operative surgery. The internal splints are silver wires, silk, plates, screws, etc., each different fracture requiring different treatment. The operations are often long and difficult, the technical work which the surgeon has to do often being extremely intricate."

Dr. James P. Warbasse of Brooklyn, speaking of fractures in the March 13, issue of the *J. A. M. A.*, says: "The *x*-ray has shown that an accurate replacing of fragments is rare. It is unfortunate that the public expects a perfect piece of joining from the surgeon, who works on an unseen structure covered by muscles, vessels and nerves, which often make it even impalpable. When we secure a perfect functional result we permit the idea to prevail that we have done a perfect piece of joining. Let us not forget that a perfect functional result is compatible with an imperfect piece of jointing. In most of the complete fractures of long bones of the leg the apposition is far from correct. Open operation is the only method by which they can be made correct. A restoration of function is the thing we aim at. But we should disabuse the public mind of the idea that that requires accurate apposition.

"Many times I have put up fractures of the tibia with the greatest care and been confident that the apposition must be perfect, only to find on *x*-ray examination glaring failures of apposition. Still good functional results were produced in these cases, but had the patients seen the *x*-ray plates we may be sure that they would have been fearful lest they never again be able to use their limbs. This is one of the values and dangers of the *x*-ray—valuable to the surgeon and patient for the help it affords in permitting the surgeon to know the condition of the bones, dangerous to the surgeon and the patient for its misleading effect on the mind of the latter."

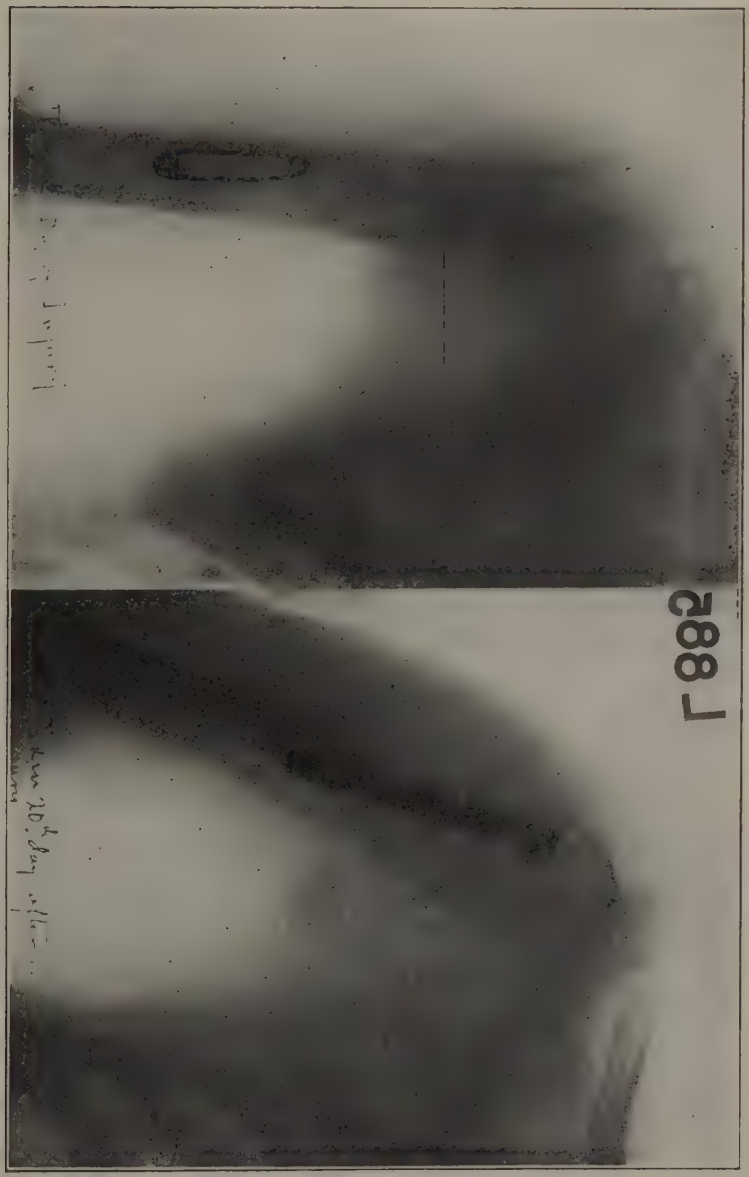
Then he concludes as follows:

"1. The perfect reduction of fractures of long bones is different and often impossible without operation.

2. Without the *x*-ray we are always in the dark as to the actual conditions present.

3. Reduction with mathematical precision is not absolutely essential for a good functional result."

Number three.—My own observation in hospitals. As my attention when visiting a hospital is usually attracted first by clinics devoted to abdominal surgery, I have probably missed many of the cases which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I might have observed. I often noticed clinics posted as "Operation for Fracture," and at last my curiosity led me to observe the technique of the operation. I had read the articles written by Mr. Lane, my attention having first been drawn to them by Dr. Broderick, a former student at the Children's Hospital in Great Ormund street, London, and now physician to the children's department of St. Anthony's Home and to St. Luke's Hospital. Mr. Lane has been treating most fractures by this method for about fifteen years, and has reduced several hundred of them with uniform good results, and all the hospital surgeons of England and Scotland have adopted it to a greater or less extent. I saw many cases of simple and of compound fractures, some of them comminuted, treated by the open method. The incision is long and free; the bone is well exposed, due care being exercised in placing the incision to do little violence to the anatomy of the part. The bone is therefore approached from whatever side offers the simplest avenue of approach. The bone is seized by strong forceps, and the fragments are closely fitted together under the eye of the surgeon; every portion of the break is made to fit accurately. No further oozing occurs from broken bone ends. Blood clots in the soft parts are carefully wiped away. Any fragment of periosteum or fascia that may have been displaced is placed in its proper relation. From the supply at hand taken clean and boiled from the sterilizer, the surgeon selects one splice or internal splint that fits the part and secures it firmly. More than one can be used if desired. These splints are made from fine, malleable, steel strips, ground out, shaped, smoothed and polished by a machinist and screw holes made at convenient distances. They may be made of silver or other material if desired, but steel answers all purposes. Many of these shown to-night were made by myself, and can be made by anyone having some mechanical skill, with an emery wheel in a short time. After fitting the splint carefully the holes are drilled into the bone to receive the screws. These are short, and are intended to be received into the proximal impact of bone only. The narrow splint and the short screws are recent modifications. I saw fractures treated in this way in Guy's Hospital and in St. Thomas Hospital, London, and heard of them in several other hospitals. I saw the old square plate fastened by four screws, one at each corner, used in Edinborough Royal Infirmary by Mr. Thompson. I never heard of any bad results in the hands of a good surgeon who followed Mr. Arbuthnot Lane's technique, as quoted in this paper from his book.

The splint may not be retained but it usually is. If not, a sinus forms, or there is some irritation, and the surgeon cuts down and removes the splint through a small incision.

Case in practice. Mr. W., age 25 years, was shingling a house when he fell from the roof, some thirty feet, landing upon a pile of rock. He sustained a severe fracture of the humerus at the surgical neck. The arm was freely movable the site of fracture, with much crepitus. There was two inches of shortening. His physician, Dr. W. E. Mabry,

recognized the serious nature of the injury and assured the friends of the man that under ordinary treatment there was little to hope for from setting, as the break was a bad one, very near an important joint, and the soft parts badly bruised. He requested the assistance of a surgeon. I saw the case with him soon after the injury and explained to them the need of open operation. They at once consented. An *x*-ray negative was taken by Dr. Edward Skinner that afternoon, and the patient removed to St. Luke's Hospital with a first aid splint in place.

Operation was done next day 10 a. m., 24 hours after injury. The incision is seen to pass along the anterior aspect of the shoulder and gave easy access to the broken bone, the ends were forced into close apposition and held by a splice with five screws. As there was much bruising and laceration of tissue occasioned by the thirty-foot fall a drainage tube was placed and left twenty-four hours, the soft parts were closely sutured down. Healing was by primary union. After the fifth day he could put on coat and after a week left the hospital. A short external splint, five inches long, was bound to the inner aspect of the arm, but all joints were allowed full motion. The arm was carried in a sling.

TECHNIQUE. *Skin Preparation:*

1st. Soaked one hour under soap poultice.
2d. Scrubbed with soap and water.
3d. Rinsed with sterile water.
4th. Washed with alcohol.
5th. Washed with ether.
6th. Washed with 1-2000 bichloride.
7th. Done up in sterile pad to remain until operation time.
8th. At time of operation this was repeated.
All operators and assistants wore sterile rubber gloves and face mask.
All tissue and sponges were handled by forceps.
Sutures were of catgut, buried. Skin was held by metal clips.
Drainage, rubber tube twenty-four hours.

At the end of the three weeks from the day of injury, the patient went to work as a steam fitter's helper and is working steadily. There is no shortening no stiffness and the condition of the bone is shown by *x*-ray.

The above is a type of many successful cases. There has been one amputation, and three deaths from infection within my knowledge. All the deaths came from persons careless of methods or unskilled in sterilizing the field of operation, the hands, splints and instruments. Bone will not resist slight infection. Unless a skillful surgeon can operate in a clean operating room, better not operate. There is no need for hurry, as the patient does not die of ununited fracture. There is much need of care as patients do die of infection. Fractures that can be fairly well held in apposition by external splint and bandage should not be operated upon. Photographs of splints in position and of splints used are appended.

A REPORT OF ELEVEN CASES OF EPIDEMIC MENINGITIS TREATED WITH FLEXNER'S SERUM.*

By D. L. Harris, M. D., St. Louis.

Much has been written within the last two years concerning the use of serum in the treatment of epidemic meningitis. In this country the serum prepared by Drs. Flexner and Jobling has been employed with marked success. While at the present time it may be definitely affirmed that the death rate has greatly diminished following its use, there are many problems connected with its administration which can be settled only after a very large number of carefully recorded clinical and laboratory data have been collected.

Dr. Flexner's work on the production of this serum was begun during an outbreak of epidemic meningitis in New York City, in 1904 and 1905. At this time there were recorded some four thousand cases, with a mortality of about 85 per cent. A commission, of which Dr. Flexner was a member, was appointed to study this disease and seek some means for lessening its terrible mortality. The result of Dr. Flexner's work was the production of a specific serum.

In brief, the serum is prepared by injecting a horse with meningococci, first subcutaneously, then intravenously, and lastly with an autolysate; the doses being gradually increased and the process involving several months. Sometime later, the horse is bled and the serum is secured in much the same manner as in the preparation of diphtheria antitoxin, and put up in small vials each containing 15 c.c.

About a year ago Drs. Flexner and Jobling collected and analyzed over four hundred cases in which the serum treatment had been used. A brief reference to some of their findings may be of interest. The largest percentage of recoveries occurred in patients between five and ten years of age, the mortality in these cases being only 11.4 per cent., against an average mortality of 70 or 80 per cent. before the use of the serum. As would be expected, the mortality rate was found to depend very largely upon the duration of the disease at the time of the initial injection of serum. Thus, of the cases treated on or before the third day of the disease, the mortality was 16 per cent.; of those treated between the fourth or seventh day, there was a mortality of 23.8 per cent.; of those who did not receive treatment until the seventh day, or later, the mortality was 35 per cent. In 25 per cent. of those who recover this occurs by crisis. One of the most striking results of the serum treatment has been the remarkable freedom of the convalescents from complications and sequellæ.

Recovery from cerebrospinal meningitis was often more to be

*Read in the Medical Section, Fifty-second Annual Meeting, Missouri State Medical Association, Jefferson City, May, 1909.

feared than death itself. Its sequellæ include blindness, deafness, idiocy and various forms of paralysis. In some epidemics of the past as many as 90 per cent. of recoveries have been accompanied with some permanent impairment. In the four hundred cases analyzed by Drs. Flexner and Jobling deafness was noted seven times, blindness and deafness once, mental impairment once and choriditis once. These authors conclude: "It is our belief that the analyses of histories of cases of epidemic meningitis which have been presented in this article furnish convincing proof that the antimeningitis serum, when used by the subdural method of injection, in suitable doses and at proper intervals, is capable of reducing the period of illness; of preventing, in large measure, the chronic lesions and types of the infection; of bringing about complete restoration to health, in all but a very small number of the recovered, thus lessening the serious, deforming, and permanent consequences of meningitis, and of greatly diminishing the fatalities due to the disease."

Just what constitutes "suitable doses" and "proper intervals" cannot at present be fixed absolutely. A much larger number of cases with careful observation and study must be recorded before fixed rules can be laid. To this end, Dr. Flexner is supplying the serum for those cases in which careful clinical and laboratory records can be made.

When the serum was first employed the dosage was from 5 to 10 c.c. and often this was given subcutaneously. Experience has shown that larger doses must be given and that these must always be administered subdurally. It is customary to administer 30 or even 45 c.c. as soon as the diagnosis can be made and this amount is given even though a less quantity of cerebrospinal fluid has been withdrawn. No ill effects have been noted following the injection of this amount.

It is advisable to repeat the injection daily for at least three successive days, giving 30 c.c. each day after the first. After this we are in the habit of waiting several days to note the effect. Upon the first indication of a return of the symptoms, the injections are resumed.

Immediately after each withdrawal, the cerebrospinal fluid is carefully examined for the presence of diplococci, and as long as these are found, it is my belief that the serum should be continued. It is very rare, however, that we have been able to discover the organism after the third injection and often they disappear completely after the first. Another striking proof of the value of the serum is that in no case have we been able to cultivate the organism after the first injection of serum.

I have had an opportunity this spring to observe the results of the serum treatment in sixteen cases of cerebrospinal meningitis. Of this number two terminated in death, nine have recovered, and five are still under observation or treatment. Of those who recovered, only one presented any permanent impairment—deafness in a child.

Of the five under observation, two have normal temperature and the physical signs of the disease have almost disappeared. The condition of the remaining three is still serious and it is at the present time impossible to make a prognosis. One of these is now suffering from a relapse.

Ten of these cases were treated at the City Hospital. Five have occurred in the private practice of physicians in St. Louis, and one in East St. Louis.

I will not burden you with a minute recital of the course of each case, but will give a brief review of such of them as illustrate most strikingly the success of this treatment. I wish to acknowledge my indebtedness to the physicians in the City Hospital and to Drs. Elsworth Smith, Walter Baumgarten and W. E. Wiatt, for records in these cases.

Case 1. Mrs. L. A. S. Age 61. On March 17th she complained of sore throat but continued with her usual work. At midnight she awoke with a severe chill, followed by vomiting and later purging. The following morning her temperature was 100.6 and she developed severe headache and pain in the back of the neck.

At noon she was drowsy with a temperature of 106. She was first seen by her physician, Dr. Walter Baumgarten, at 2 p. m., at which time her temperature was 105.4; pulse 116; resp. 130. She complained of severe headache and pain in the back and neck. The neck was not rigid or painful when manipulated. Kernig sign was not present. A small petechial rash was noted on the chest, both front and back. Shortly afterward this rash extended to the neck and arms.

At 8:30 p. m. of the same day she was comatose; pupils contracted. The neck was rigid and Kernig's sign marked on both sides. Patellar and plantar reflexes were absent. Leucocyte count 28,600.

At 11 p. m., 30 c.c. of turbid cerebrospinal fluid was withdrawn and 30 c.c. injected. This fluid contained polymorphonuclear leucocytes and numerous intracellular diplococci.

The following morning at 9 o'clock she was rational. Her temperature dropped to 99. The hypersensitiveness had disappeared. Leucocyte count, 14,000.

The petechial rash was marked all over the trunk and upper and lower extremities. On the evening of the same day patellar and plantar reflexes had returned.

At 10 p. m. a lumbar puncture was made but no fluid obtained. 30 c.c. of serum injected.

The next morning patient felt greatly prostrated. Her mental condition had entirely cleared. The signs of meningitis had greatly diminished, and the leucocyte count had dropped to 8,000. No fluid was obtained from a lumbar puncture but 30 c.c of serum were injected.

Except for the tremendous prostration, the patient felt very comfortable. Pulse irregular, and there were other evidences of myocarditis. Recovery from this prostration was slow but steady. The recovery was complicated by an effusion in the right knee, which, however, gradually disappeared. There was at one time for a period of two or three days slight deafness. This disappeared and she suffered no other complications.

Case 2. R. W., colored girl, age 17 years. Was taken ill, four days previous to admission, with a severe chill accompanied by severe head-

ache and aching pains in back and limbs. Two days later she vomited. On admission she had a temperature of 103.4; pulse 124; resp. 32.

The day following admission opisthotonos had appeared. Kernig sign on the right. Left knee jerk absent. Pupils reacted sluggishly to light. Sensorium was somewhat clouded. Spinal puncture was made and 41 c.c. cloudy fluid withdrawn, in which were found intracellular diplococci in mederate abundance. Leucocytes, 17,000.

On the following day 57 c.c. fluid withdrawn and 30 c.c. serum injected. Temperature dropped steadily. The sensorium was much clearer and the rigidity in the neck was less marked. Two days after the initial injection the temperature reached 99.4. The retraction of the head was greatly diminished and the patient seemed improved in every respect. The patient's temperature reached normal on the third day following the first injection and her improvement was constant.

She was discharged recovered on April 13th.

Case 3. W. R., colored male, age 2 years. This patient, apparently well until April 21st, was suddenly seized with convulsions, complained of intense headache and was brought to the hospital on the evening of the 22d. Examination showed rigidity of the neck muscles, extreme hypersensitiveness, a temperature of 104°, pulse 140, and respiration 40. Kernig's sign was absent. A lumbar puncture was made and 15 c.c. of turbid spinal fluid were withdrawn, and 15 c.c. of Flexner's serum injected. Diplococci were found in the spinal fluid.

The following day 40 c.c. of spinal fluid were withdrawn and 45 c.c. of serum injected. The temperature during the day dropped from 104.2° to 102° and on the 24th it reached 98.6°. The improvement in the physical condition corresponded to the rapid fall of the temperature.

On the 25th the child played in bed and stood up and to all appearances had entirely recovered. He was discharged April 29th and recovered.

Case 4. H. S. Patient is a little girl two years old. The attack began March 14th, with nausea and vomiting. The following day she complained of tenderness and sensitiveness on being moved.

On the third day the head was retracted and there were a few petechiæ over the throat and trunk. On admission March 20th, six days after the onset, her general condition seemed good. The head was drawn back and the spine rigid. There was general hypersensitiveness. Kernig sign present.

There were scattered petechial hemorrhage over the abdomen and thorax. Leucocyte 25,600. 50 c.c. of milky spinal fluid were withdrawn and 45 c.c. of serum injected. Diplococci present.

On the afternoon of the following day she was very much improved. Spastic condition of the neck and back lessened. 30 c.c. of serum were injected after the withdrawal of the 30 c.c. spinal fluid. Her temperature had dropped from 103.5 to 100.

On the following day 69 c.c. of fluid withdrawn and 15 c.c. of serum injected. Patient continued to improve until the fifth day of admission,

when the temperature suddenly rose to 104° and a scarlatinal rash appeared over the body.

It is a question whether this was the result of the serum or whether it was a true attack of scarlet fever.

A few days later her temperature had dropped to 99°, and her recovery was complete and uneventful. She was discharged April 9th, "recovered."

Case 5. L. M. A well-developed, well-nourished boy, 15 years of age. History previous to onset negative. He was apparently well until the morning of March 6th, when he awoke with a severe frontal headache, following a restless sleep. He became semiconscious, and alternating periods of restlessness and drowsiness. On admission he was stuporous; if aroused he became very irritable and exhibited marked hypersensitiveness. His neck was retracted and rigid. Kernig's sign present on both sides. Knee jerks absent. Herpes labialis. Leucocyte count 17,000. The cerebrospinal fluid (30 c.c. withdrawn) was cloudy and microscopical examination showed the cells to be polymorphonuclear, with a small number intracellular, Gram-negative diplococci; 30 c.c. of serum injected. On the following day his physical condition was unchanged. Mentally, he appeared somewhat clearer. He resisted so strongly against the spinal puncture that no serum was injected at the first attempt; 72 c.c. of fluid withdrawn. On the second day 60 c.c. of fluid withdrawn and 30 c.c. of serum injected. His mental condition continued to improve and in the afternoon he appeared rational. On the 10th (fourth day) he was much improved physically and talked rationally. Reflexes unchanged since admission. Rigidity of neck lessened. 58 c.c. of fluid removed and 30 c.c. of serum injected.

March 11th. No improvement over yesterday. 40 c.c. of fluid withdrawn and 30 c.c. of serum injected.

March 12th. Condition unchanged. 47 c.c. of fluid removed and 30 c.c. of serum injected. On the 14th his temperature rose to 103.6. The head was more retracted and his general condition was not so good. 51 c.c. of fluid withdrawn and 30 c.c. of serum administered. Sensorium clear. Leucocytosis not increased (11,000). It was then decided to discontinue the serum. On the 15th, 60 c.c. of fluid were withdrawn. During the following days his temperature steadily dropped to normal. His condition improved gradually. By the 20th he felt very comfortable, had an excellent appetite and slept well. On the 28th he was allowed to sit up in bed. From this time forward his improvement was continuous. When he left the hospital, April 2d, he had apparently recovered. Except for a slight Kernig, all evidence of the meningitis had disappeared.

Case 6. F. S. A boy, 17 years old. Previous history negative, the parents stating that the boy had never before been sick. On April 7th the boy complained of a sore throat. On the day following he also complained of slight headache, although he attended school. On the 9th he complained of an increase in the severity of the headache and did not eat supper in the evening. He retired early in the evening and about 1

o'clock on the morning of the 10th his mother was awakened by hearing him vomiting in an adjacent room. He did not get up the next morning for breakfast and on being questioned by his father, about 8 o'clock, he complained of very severe headache and general muscular pains in the back and neck. A few minutes later his father found him unconscious and his physician summoned at once found him unconscious with distinct rigidity, slight retraction of the neck, marked Kernig and a temperature of 103°. At 2 p. m. the temperature in the axilla was 103°, the respiration 20, and the pulse 106. He had a leucocytosis of 26,000. He was in a stupor and could not be aroused. He groaned when moved or when the reflexes were examined. The Kernig was marked, the knee could not be extended more than an angle of 100°. The knee jerks were absent, plantar reflex present, the pupils slightly unequal and slightly dilated. A lumbar puncture was made and about 42 c.c. of cloudy fluid withdrawn. 45 c.c. of Flexner's serum injected. Examination of the fluid showed presence of intracellular diplococci. These were not numerous. The patient's condition continued unchanged excepting that the pulse gradually dropped to 90 by 7 p. m., the temperature being 103.4°, in spite of the cool baths. At 9 p. m., the temperature reached 105° in the axilla; the patient was very restless. At 10 o'clock the breathing became very short and difficult, the circulation became impaired, feet and extremities were cold, temperature rose to 136° and the patient died at 11:30.

Case 7. F. M. This patient is a boy 15 years old who was taken sick in a school room on the morning of April 28th. He was nauseated, vomited, had a hard chill, and complained of great headache. He went home and went to bed but his condition was not considered serious enough by the family to call in a physician until the following day, by which time he had a temperature of 101° and still complained of pain in the back and extremities and severe headache.

On the 30th the rigidity in the back was marked, the boy had become delirious and slightly stuporous; the head was drawn back, the temperature was 101°, pulse 120 and the respiration 30. A probable diagnosis of epidemic meningitis was made by the attending physician. A spinal puncture was attempted but no fluid was obtained.

On the following day, May 1st, he continued very restless, insisted, during his delirium, on walking around the room, could not be kept in bed, and complained of great hypersensitiveness. His temperature reached 100.4°, pulse 122, and the respiration 46.

On May 2nd, I saw the case and found the boy delirious but able to answer questions. There was extreme opisthotonos and great retraction of the neck, the Kernig's sign was marked on both sides and the patellar reflexes were absent. The temperature was 100° (axilla), pulse 112 and the respiration varied from 35 to 45. A spinal puncture was made and 80 c.c. of turbid fluid withdrawn, and 45 c.c. of serum injected. This fluid was found to contain numerous intracellular diplococci. The leucocyte count was 20,000.

On the following day, May 3d, there was a marked improvement in the sensorium, the patient was entirely rational, but the physical signs were unchanged. Eighty c.c. of a very turbid cerebrospinal fluid were withdrawn and 45 c.c. of serum injected. The leucocyte count was 16,000.

On May 4th, 90 c.c. of the somewhat less cloudy cerebrospinal fluid were withdrawn, and 30 c.c. of serum injected. The patient on this day said that he was free from pain and appeared to be in a much better condition, although the temperature and pulse remained unchanged. The respiration, however, dropped to about 30. The leucocyte count was 20,000. The retraction of the head was much less, the opisthotonos had almost disappeared and the patient showed marked improvement.

On the 6th, 110 c.c. of clear, amber colored spinal fluid were withdrawn, and 45 c.c. of serum injected. The leucocyte count remained at 16,000. The temperature had dropped to 99.8° and pulse to 100.

During the night of May 6th and 7th patient's condition became somewhat aggravated, he complained of headache, was mildly delirious, had involuntary evacuation of the bowels, and his temperature rose to 101° and respiration increased to about 30.

On the day of the 7th his condition was decidedly worse and it was thought best to discontinue the serum. The leucocyte count was 16,000.

On the 8th a marked general improvement was noted both in his physical and mental condition. The leucocyte count was 13,000, the temperature dropped to normal and the respiration to 24. From that day improvement was steady and on the 16th there was no retraction and but little stiffness in the neck; the temperature, pulse, respiration and leucocyte count were normal and the patient's recovery seems assured.

DISCUSSION.

Dr. Wolf, Kansas City: I heard a number of papers on this subject at the American Medical Association last year, and the results reported to-day are in accord with those reported at that time. The statistics in cerebro-spinal meningitis have been entirely reversed. The mortality was 75 per cent. and now we have 75 per cent. of recoveries.

Dr. John D. Seba, Bland: I should like to ask how is this fluid withdrawn and the serum injected?

Dr. Harris, in closing: The serum is given free by Dr. Flexner. He requires that a bacteriological diagnosis shall have been made before the administration of the serum. I have supplied the physicians of St. Louis with the serum, and will supply it to physicians outside of the city upon sufficient evidence that the condition is produced by the diplococcus of Weichselbaum. Physicians who have a suspected case of meningitis may send the spinal fluid to me, and I will make the examination and forward the serum should the diagnosis be positive.

The technique of making a lumbar puncture is as follows: With a needle 4 or 5 inches long the puncture is made on a line drawn between the crests of the ilium. The needle should be inserted slightly to one side of the median line. When the spinal canal is entered, the fluid will readily flow out if the case is one of epidemic meningitis. As much fluid should be withdrawn as will escape. It occasionally happens that we fail to get spinal fluid following a puncture. In this event another puncture should be made. The serum may be obtained from Dr. Flexner, Rockefeller Institute, New York City.

REPORT OF AN ACCIDENTAL OPENING OF THE LATERAL SINUS.*

By E. T. Senseney, M. D., St. Louis, Mo.

In reviewing the literature on the above subject, one finds surprisingly few cases reported, and these are, for the most part, cases which did not result fatally. If all accidental injuries of the lateral sinus, whether or not they resulted fatally, were reported, we could better avoid such misfortunes; and when they did occur, we would be in a position to understand what dangers might arise and how they should be combated. The case I am going to describe presents some features which are quite unusual, and is, I hope, worthy of your consideration.

The patient, Frank McD., white, age 18, presented himself at my office June 19, 1908, for relief of a chronic middle ear suppuration of long duration. At the age of seven, the patient fell, his left ear coming in contact with a block of wood. He experienced at this time an acute lancinating pain in his left ear, followed by a discharge of blood. The latter was succeeded by a purulent discharge which has persisted without intermission. During January, 1906, the patient had an attack of acute mastoiditis. Dr. X., at that time had performed the simple mastoid operation, and four weeks later had attempted a radical operation. Following the latter procedure, the patient's condition had been very critical. He eventually recovered, but the purulent discharge continued. The patient's general condition had been far below par (*e. g.*, constant malaise, loss of appetite, etc.). He had occasional septic manifestations, and from time to time suffered from attacks of severe ear pain.

At the time of my first examination, June, 1908, the patient was ill nourished, weak, anemic, dull and mentally sluggish, temperature 99.6° F., pulse 80, respiration 20. Facial paralysis of left side was apparent, and although slight, was positively proven by various tests. Aural examination showed nothing abnormal on the right side. Left auricle normal. Post-operative scar immediately posterior to left auricle. Left external auditory canal normal (showing that the radical mastoid had not been performed). Left membrana tympani absent, middle ear filled with granulations, no ossicles or remnants of the same demonstrable, small amount of purulent discharge.

Hearing of the right ear was normal, of the left, practically negative.

The radical mastoid operation was advised. The patient entered the hospital June 23, 1908, and was operated upon June 24, 1908.

*Read in the Eye, Ear, Nose and Throat Section, Fifty-second Annual Meeting, Missouri State Medical Association, Jefferson City, May, 1909.

Operation: The initial incision was made immediately posterior to the auricle through the scar of the previous operation. The knife passed readily to the bone inferiorly and superiorly, but for about 1 c. m. parallel, and directly posterior to the external auditory canal, dense fibrous tissue was encountered. The periosteum was readily elevated above and below, but in the mid portion of the wound, a funnel-shaped mass of connective tissue (its base seemingly closely attached to both bone and integument, its apex directed inward towards antrum and firmly adherent) was encountered. It was found impossible by blunt dissection to free this obstruction and expose the operative field. A knife was introduced to the inner side of the mass as close as possible to its apex and the cut made from within out. This incision was followed by a profuse flow of venous blood. Dr. Simon (whom I was fortunate to have to assist me), immediately packed the sinus opening with gauze. The operative field was then easily freed, and it was shown that the sinus had previously been exposed, the opening in its bony wall being over 1 c. m. in its greater diameter. Through this aperture there had been projected this cone-shaped, fibrous-covered "aneurism" of the sinus. The antrum was found to have been opened and the posterior wall of the canal had been partially removed. The operation was concluded in the usual manner. Bone in the region of the facial canal was soft and necrotic, and as much as was consistent with safety was removed. Plastic after Panse. Opening in the lateral sinus was packed with iodoform gauze tape and wound was closed posteriorly with the exception of space for this dressing.

On the second day following the operation, the facial paralysis had entirely disappeared. However the patient at the end of the second day developed a septic fever, which reached its maximum on the fifth day (103° F.). The temperature was lowered by changing the dressing in the external canal (it once being necessary to dress the case four times in twenty-four hours). The gauze pack was removed from the sinus on the eighth day, without hemorrhage. From that time on the temperature was normal, and recovery was rapid and uneventful. The cavity was completely epidermatized two months after the operation, and the ear was perfectly dry. Hearing is greatly benefited, and the patient's general condition has markedly improved.

While many injuries of the sinus are due to the fault of the operator, many are unavoidable. This case falls particularly in the latter class, since even if we had known the existing condition it would still have been necessary to open the sinus, in order to bare the field of operation. However, the voluntary act would have been much less disconcerting than the unexpected. An additional point of interest in this case is the fact that the patient had his lateral sinus opened twice without fatality. It is also worthy of note that at the second opening, which occurred two years after the first, the sinus was found to be patent. There is no question but what the sinus was opened at the previous

operation, and not merely exposed, as the hastily abandoned and only partially completed "radical," together with the evidence supplied by the patient's family, proved this without a doubt. I feel that much of the credit of the happy termination is due to the prompt and efficient action of Dr. F. C. Simon when the sinus was opened.

308-9 Lister Bldg.

DISCUSSION.

Dr. M. C. Shelton, of Joplin, stated such an accident is not unusual. The remedy is to pack and go right ahead with the operation.

Dr. R. P. Scholz, St. Louis, said that opening of the sinus during operation was not at all unusual but rather a common occurrence, particularly in the European clinics where students are permitted to operate. To show what a trivial effect the opening of the sinus may have on the patient, he told of a case operated upon by a Dutch physician visiting the Politzer Clinic, to whom the privilege of operation had been extended. The patient was a woman of about 65 years of age. The apparent awkward operator had removed only several small fragments of bone from the mastoid; when placing his gouge perpendicular to the surface of the bone, with a violent stroke or two of the mallet, he fairly severed the lateral sinus. This was followed by profuse welling up of blood which caused the operator to discontinue. The next morning when the operator and several of his friends again visited the hospital and found his patient's bed empty, he inquired when death had taken place and whether a post-mortem examination had been made. When told that the patient was out walking in the yard he was indeed surprised.

It is true that a secondary operation, as described by Dr. Senseney, is more difficult than in a fresh case, and we can readily pardon the accidental opening of the sinus under these conditions. If, however, such should occur during operation, there need be no alarm on the part of the operator, for with little pains the hemorrhage can be controlled so as not to interfere with completion of the operation; the prognosis remaining very favorable. The finding of necrotic bone around the facial nerve is not unusual; most likely its removal in this case had been prevented at the first operation by the bleeding.

Dr. Senseney, in closing, stated that although great precaution was taken, septic infection followed, as shown by the temperature. One remarkable fact about the case was that the sinus was found patent in spite of its previous opening.

Dr. Norris asked what evidence is there that the sinus was packed in the first instance.

Dr. Senseney replied that there was no positive evidence, but from what the family said and the story told by the physician to the patient, the operation had been brought to a sudden close by a gush of blood, which meant the opening of the sinus; this must have been packed, as the hemorrhage could have been controlled in no other way.

THE TREATMENT OF PARENCHYMATOUS AND EXOPHTHALMIC GOITRES.*

By Edward G. Blair, M. D., Kansas City, Mo.

The reason for segregating the parenchymatous and exophthalmic goitres from the other types and giving their treatment consideration conjointly is first, because of a well-established conviction that the latter is a progressive form of the first and oftentimes indeterminable and that the question of instituting radical treatment early or allowing this transition of forms to progress through expectant or indifferent treatment is a very pertinent one. The second reason is the well-established fact that nothing but surgical intervention will suffice for all the other forms of goitre.

To substantiate the foregoing, we must turn to the pathology and physiology of these glands as well as to the clinical evidence. Ewing[1] has described four distinct types or stages in the natural history of the thyroid glands of Graves' disease:

1. In the early stages of the disorder, only hyperemia with increase of colloid showing diminished staining reaction with eosin. Microscopically the gland may show no gross changes.
2. Hyperemia with increased colloid, and cellular hyperplasia.
3. Extensive cellular hyperplasia, with increase of imperfect alveoli lined by large or giant cells, and nearly complete loss of colloid.
4. Late stages with fibrosis, atrophy of cells, sclerosis of vessels, hemorrhages and cysts.

In the first and second class we have the pathological findings which are likely clinically to be variously classified as "congestive goitre," "hyperemia of the gland," "colloidal" and parenchymatous goitres, all of which are regarded as innocuous and for which the treatment heretofore has been erratic and empirical. These stages can exist without symptoms of Graves' or may exist with the symptoms of Graves' beginning and unrecognized. Marine and Lenhart, in their observations from a study of goitrous glands in dogs, have found a tendency in all hyperplastic or parenchymatous goitres to undergo a reversion to the colloid state, but of varying degree; and that the study of these glands, heretofore based on human thyroids, was not experimentally possible and hence the confusion about their real state from the clinical cases offered. From their work, coupled with Ewing's pathological findings, we cannot help but be convinced of the interchange of forms

*Read in the Surgical Section, Fifty-second Annual Meeting, Missouri State Medical Association, Jefferson City, May, 1909.

by no means always clinically recognizable. The size of the glands in no way plays a part in the constitutional effect, as the physiology will show and as I can demonstrate with specimens, and that the macroscopical appearance of simple parenchymatous glands and those of Graves' is similar and indistinguishable.

In considering the physiology of the thyroid gland in reference both to the nature of Graves' disease and its treatment, I cannot but liberally refer to the work of Beebe and Rogers,[2] who have developed so much valuable experimental research and have so ably reviewed the work of others. They have concluded that the disease is a hyperactivity of the thyroid gland and, whether goitrous or otherwise, the thyroid is the offending factor in a vicious circle. The theory on which they work is that the thyroid secretion governs oxydation (?) and with it the vaso-motor system. The secretion contains a cardio-accelerator principle and an oxydative (?) principle. In health, an automatic centre governs the out-put, with each enzyme or principle in definite constant relation. In Graves' disease the quantity of the out-put of the double contents of secretion is increased, but in time the quality deteriorates and the proportion between the constituents varies. As the thyroid activates all other organs, the thyroid secretion activates its source on the thyroid itself, and anything which checks the amount of secretion or lessens the demand for it, breaks this vicious circle. In further support of placing the responsibility on the thyroid gland for the production of symptoms of thyroid cases they[3] cite that tremor, nervous irritability, tachycardia, diarrhea, perspiration, and rapid loss of weight, have all been produced in animals, and also in the human subject, by the administration of thyroid preparations. The almost constant occurrence of goitre, the histological appearances indicative of increased activity, and the greatly increased circulation through the gland vessels, together with the amelioration of the condition by surgical removal, are additional arguments that the gland is a fundamental factor in the disease. That such changes occur in the thyroid gland during the activity of other glands, and especially those responsible for the sexual function in women, there is much clinical evidence to show. The occurrence of goitre in women in the proportion of 8 to 1[4] in men; its almost universal first manifestation at puberty, the increase of the size of the gland and thyroid symptoms, where they have existed, at menstruation; the frequent development of goitre during pregnancy and, oftentimes, its recession afterwards, afford sufficient proof. My clinical study of sixty-three cases of goitre, in connection with some operative observations, has led me to a ready acceptance of the work which I have just reviewed. The numerous spontaneous changes in the size of glands; the many reported cures and improvement from so many widely different agents, have convinced me of the interchangeable activities of the thyroid. A closer study of three cases, upon each of which I did a unilateral thyroidectomy, has impressed me with the importance of early recognition of changes in the

thyroid and the necessity of taking some early radical measure to prevent the progression. None of these cases would have been diagnosed as Graves' cases. Each had a bilateral goitre, clinically diagnosed as parenchymatous; each suffered from almost daily headaches which could not be accounted for; two had slight prominence of the eyes, but neither von Graefe's nor Stalwag's sign was present. No increase in the pulse rate above 100 was noted in any one; all were "nervous," without exhibition of tremors, one had exhibitions of hysteria, and her case had been diagnosed as such by competent medical authority; one was an adult male, one was a married woman who had borne one child which had not influenced the goitre, the third was in a young girl, age 18, which I had observed from its incipiency and for which the treatment had been as unstudied as had the other two; but all of them, I am sure, were gravitating toward the exophthalmic type.

In giving consideration to the treatment of goitre one is impressed with the fact that it is wonderfully widespread and diverse. Pick says that the medical measures are notoriously uncertain and the multitude of methods which have been suggested for the cure of exophthalmic goitre give sufficient evidence of failure. There are time-honored medicinal agents, however, to which a sufficient number of adherents cling not to give them some review. Chief among these are the use of sedatives, bromides usually, with rest and hygiene; the internal and external use of iodin, and more recently the hydrobromate of quinine. The first of these methods embrace a line of symptomatic treatment which undoubtedly produces amelioration of the symptoms in either transforming glands or the definite exophthalmic, and it is not impossible, under these conditions, a reversion may take place toward the normal gland. The iodin treatment is founded mostly on clinical evidence, with considerable to support it. It has, in addition, the experimental work of Beebe[5] with a review of the work of Blum, Roos, Reid, Hunt, and Oswald, with these findings, that if potassium iodid be given to an animal there is an increase in the content of physiologically-combined iodin in the gland. The detoxication theory of Blum for the necessity of a globulin rich in iodin, has been rejected. Oswald finds in goitre a great variation in the relative and absolute amounts of globulin and iodin, and he summarizes by the statement that in goitre there is a relatively large amount of globulin poor in iodin. Beebe concludes that such a theory really means a hypersecretion of a product of less physiologic activity than the normal. Marine and Lenhart[6] have shown that by feeding dogs with parenchymatous goitres, iodin, a reversion to the colloidal state, can be produced identical with the spontaneous reversion which is known to occur. But there is not yet sufficient evidence, other than the clinical, to show that iodin is curative of parenchymatous and exophthalmic goitre. The hydrobromate of quinine treatment can, from the facts already presented, hardly have a logical support as a cure, although the

possibilities of amelioration of symptoms and the clinical evidence of cures is admitted.

The next therapeutic agent to receive attention, although it is more physiologic, is the administration of commercial thyroid extract. Its effect is most noted in the congestive goitres of puberty, and may be due to an increase of the iodin content of the globulin, or to the furnishing of other principles for which there is a demand during the activity of the development of the sexual organs. That it temporarily gives improvement I can testify to, in a considerable number of cases; but any permanent effect I have failed to observe in a single case; the tendency being toward recurrence. It should be used with caution in parenchymatous cases and absolutely rejected in exophthalmic. The use of direct galvanism in high currents and the application of the *x*-ray has not escaped pressure into service in the cure of goitres. The only theory upon which they can be used to cure, is by the production of an artificial fibrosis in the glands, and thereby strangling multiplication of gland cells and over-production of secretion. However doubtful this may be, there is some clinical report of cures, and Mayo has recommended the *x*-ray as a preliminary treatment before operation for the reduction of the vascularity and the diminution of the secretions. He does not, however, regard it as a cure.

There is one method of treatment very popular with the laity against which I wish to protest, and that is the use of massage. In no case of those I have studied have I observed the slightest benefit, and logically it should do harm by perhaps exciting cell activity and the expression of secretions into the circulation.

Keeping in mind the need of eliminating the thyroid gland or its activities, I wish to present the able work of Beebe and Rogers in their production of a specific cytotoxic serum for the cure of the parenchymatous and exophthalmic goitre. The serum is developed by the injection of the proteids of normal human thyroids into sheep, and after a suitable time, the development of a serum possessing two factors, one, specifically antagonistic and inhibitory factor against the proteids of the diseased glands, and one to some extent an antitoxic effect on the secretions. The serum is designed for the condition of hyperthryoidism. It is some support to the radical surgical removal to know that it is more likely to be effective in the cases where surgery would avail; the earlier the cases the better the results, as I am sure follows in extirpation. The cases in which it does not do well are late cases in which surgery does not suffice, or is fatal. They report cures in 25 to 30 per cent.; 60 per cent. improved and 10 per cent. will die. Since January 1st, 1909, I have personally treated five cases by the use of the serum and have acquired an impression of its value. Three are exophthalmic glands; one parenchymatous, and one an atypical form. One exophthalmic, after five months treatment, is apparently cured; all the others still under treat-

ment are improving except the atypical case which, after some improvement, discontinued the treatment.

It now remains to present the position which surgery holds to the treatment of these cases, and after a limited experience of thirty operations I find much in it to commend; but with reasonable conservatism. I am urging the earlier and more careful study of thyroid enlargements and symptoms, and the early removal of at least one-half of a permanently established parenchymatous goitre. The mortality in such cases should approach that of hernia. In exophthalmic cases the danger of operation is increased; but through a better study of these cases and the improved technique of operators, it has been wonderfully decreased. One year ago I collected statistics from the literature extant showing a mortality rate in Graves' of 17 per cent.; this covering a varying number of years previous to 1906; since that time the mortality approaches 6 per cent.; the number of cases rejected for operation is not obtainable. Kocher, in 1907, had finished a series of 600 operations, including the exophthalmic type, without a single death. The medical statistics in comparison are as follows:

Williams reports on twenty-three cases treated medically; six fatal; (25 per cent.); improvement in seven only. Moebius (quoting from five authorities) gives a mortality from medical treatment of 10 per cent., Von Graefe 25 per cent.; Mayo quotes Ord, and Wasinzie gives 56 cases which had existed for five years, or been fatal, with ten recoveries; fifteen incomplete recovery; thirteen considerable improvement; four unchanged and fourteen (25 per cent.) fatal. As to results of operations in exophthalmic cases, Witherspoon reported, in 1906, the results of statistics compiled from the previous ten years, 60 per cent. as cured and 15 per cent. as decidedly helped; the rest slightly helped or died. There has since been no clinical evidence to show that the curative results have not been improved.

In the surgical procedures, from the work of others and my personal experience, I am first in favor of ether as an anesthetic. Dr. H. C. Andersson, who has administered ether in twenty-one of my cases, has repudiated nitrous oxid as a primary anesthetic, and straight ether has been found without a fault. I advocate this for use in this country against the well known use of novocain and adrenalin, locally used by the Swiss operators, exhibitions of which I have seen. I am in favor, always, first of a unilateral excision, perhaps with a middle lobe and a careful study of the case following, before other operative procedures. For the avoidance of the recurrent laryngeal nerve and the parathyroid bodies, I follow the rule which Hartley has expressed, and reiterated by Mayo, of staying close to the gland, particularly in the posterior region of the stump. I have not previously referred to the parathyroids because I believe, as Forsythe[7] has concluded from his investigation of the glands, that there is not sufficient evidence to justify the opinion that the glands bear a pathogenic relationship to any known disease. They are surgically of

import because of the attention which Halstead has given to the sequence of tetany from their complete extirpation; a fact which has been experimentally proven in dogs.

In summarizing the paper I have tried to show: First, that parenchymatous glands are interchangeable with other clinical forms and are prone to progress to the exophthalmic type, and that their early toxic symptoms are frequently overlooked. Second, that all forms of treatment except the surgical and perhaps the serum treatment of Beebe and Rogers is uncertain and efficacious to only a limited degree. Third, that surgery has proven a safe procedure and curative to the largest extent and should be resorted to more early. Four, that the serum treatment may prove efficacious in a considerable number of cases where surgery would avail.

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REPORT OF TWO CASES OF INJURY TO THE HEART.*

By Louis Rassieur, M. D., St. Louis.

While Acting Superintendent of the St. Louis City Hospital the following cases of heart trauma came under my care.

Case I. Penetrating stab wound of the right ventricle. H. W., Permit No. 4078, Hospital No. 32, age 36 years, white man, was brought to the hospital at 3:20 a. m. September 15, 1901. He was stabbed in the left breast with a pen knife during a quarrel. A small incised wound, one and a half inches below and one and a half inches to the right of left nipple, was seen. The wound was enlarged and examined digitally. It penetrated the left pleural cavity. The pericardium could be felt but no puncture was found. There was a slight hæmothorax present. The rib was not injured. There was a possibility of the internal mammary artery being cut. A gauze plug was tightly forced into the wound to stop any bleeding. On account of great shock a radical procedure was deferred. Patient was almost pulseless. He was dyspnœic. A dressing was applied. Morph. sulph., gr. ¼, was given hypodermically one time. Physiologic saline solution was given repeatedly, hypodermically and by the rectum.

At 9 a. m. pulse was, to my surprise, very much better. Patient said he felt fine. Pulse was 104, resp. was 20, temperature 98.2°.

In the evening of the same day, however, the pulse was 108, resp. 30, temperature 101.2°.

Thereafter the temperature became irregular. The pulse became progressively more frequent. The respirations became more frequent and labored.

Three days later (September 18th) signs of a pyohæmothorax were appearing. The left pleural cavity was almost entirely full of fluid.

September 20th. One inch of the sixth rib was removed in the left posterior axillary line. The pleural cavity was full of infected blood. A rubber drainage tube was introduced.

The course now was one of empyema of the thorax. Patient grew gradually weaker and died October 2d, seventeen days after the beginning of his trouble.

On the day of his death his pulse was 130, his respirations 40, and his temperature 100°.

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*Read in the Surgical Section, Fifty-second Annual Meeting, Missouri State Medical Association, Jefferson City, May, 1909.

His pulse was at no time faster than 136. His respirations were most frequent on the day of his death, forty. The highest temperature was 102.8°.

On October 3d a post mortem examination was made by Dr. D. F. Hochdoerfer, a deputy to Coroner Funkhouser.

I shall briefly quote from his protocol the excerpts which interest us. He described the incised wound and the surgical wound over the sixth rib. He found the left pleural cavity opened by resection of the sixth rib and the drainage tube at that site. Left lung was partially collapsed. Right pleural cavity and right lung were normal.

> "Pericardium presents an incised wound one inch long in anterior portion. The pericardial sac contains blood and clots. Heart shows an incised wound ¾ inch in length, penetrating right ventricle just underneath the auriculo-ventricular valve."

In a personal communication the deputy coroner said that during systole the wound was evidently closed by muscle contraction, and during diastole by the superimposing auriculo-ventricular valve segment. The wound was undergoing repair.

From the foregoing one may class this as a case of penetrating wound of the right ventricle which would have healed without operation. Unfortunately death, caused by sepsis, intervened.

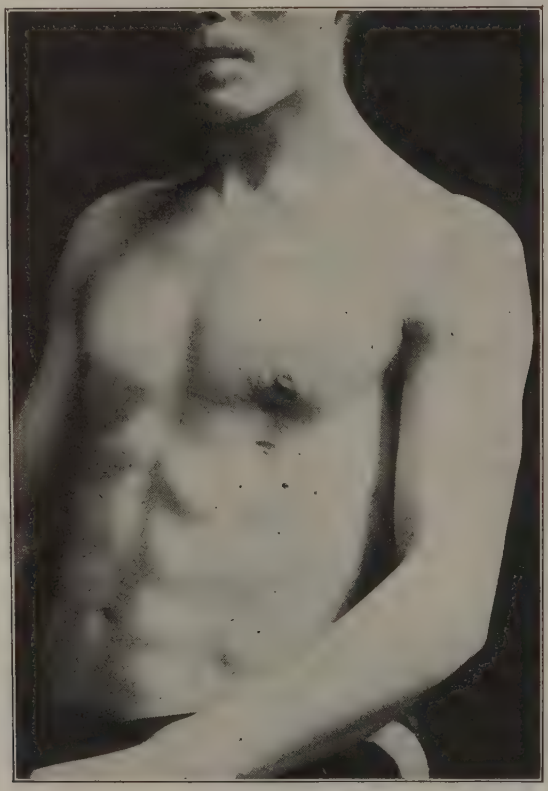
The above course has been observed before. Attilio Ceridali, private docent at the institute of Forensic Medicine at Florence, Italy, under the caption, "A Contribution to the Knowledge of Healing Heart Wounds," reports a similar case in the *Muenchener Med. Wochenschrift,* July 14, 1908, p. 1505. An abstract of his report is as follows: A young man sustained a heart injury in a quarrel. Eight days later he died therefrom. The autopsy showed that the right ventricle had been completely penetrated by a knife stab wound which caused hæmopericardium and collapse. A histological examination of the wound showed that scar tissue had formed. He concludes that heart wounds heal by proliferation of connective tissue, namely of the interstitial and subpericardial.

Marchand, in his "Treatise on the Healing of Wounds," which appeared in 1901, maintains, on page 328, that heart wounds heal by cicatrization, a so-called fibrous myocarditis. As to the regeneration of muscle fibres the signs are very feeble, if present at all. He describes a gunshot wound of the heart in a man, age 28 years. The man died ten days after the accident. An autopsy was made. A penetrating wound of the right ventricle was found which was undergoing cicatrization. The bullet was walled off in the cavity of the ventricle. He cites the case of Steudener. A man with a non-penetrating gunshot wound of the left apex died of an intercurrent trouble fifteen weeks after the injury. The wound had healed by cicatrization.

I shall now report my own second case,—*a non-penetrating gunshot wound of the apex of the left ventricle and of the margin of the left lung:*

E. S., Permit No. 7461, white man, age 20 years, as a result of

tentamen suicidii, shot himself on January 18, 1903, at 2:45 p. m. The first medical attendant probed the wound with a lead pencil. Patient arrived at the hospital at 3:45 p. m. His pulse was bad. His abdomen was board-like. A powder burned, pistol wound was present in the fourth interspace, just below and internal to the left nipple. Examination revealed a slight hæmothorax on the left side. The patient looked pale.



Showing thorax of my second case with cicatrix as it appeared six years after the operation.

He was very morose. The first impression was one of gunshot wound of the peritoneal cavity. During the time that patient was being prepared for operation he bled profusely. At the beginning of the operation patient was depleted, apathetic and covered with profuse perspiration. Chloroform was used. Operation was begun three hours after injury.

Operation: An incision three inches long, parallel to the papillary line, was made extending through the gunshot wound. One inch of the fourth and fifth ribs was resected. (One-half inch of the cartilaginous and one-half inch of the bony portion of the respective ribs.) The left

pleural cavity contained much blood. Patient was turned on his belly to let the blood run out of the chest. I now rolled him on his back. A powder-stained hole was seen in the pericardium. This hole was enlarged for two inches. The pericardial sac was full of blood. I mopped the heart-sac and pulled the heart forward with the left hand, holding the heart by the apex. There was a ragged laceration in the wall of the left ventricle, midway between the base and the apex. The laceration was about ⅜ inch deep, ⅜ inch wide and about one and one-half inches long. Three silk sutures of medium size were introduced in the heart muscle. The bleeding from the heart muscle ceased. A wound of exit was discovered in the bottom of the pericardium. I made no attempt to close it but left it as a drain. I washed the sac with physiological saline solution. The burned portion of the pericardium was excised and the incision united with eight medium-sized silk sutures. No drainage was used in the pericardium. By means of an artery forceps, the lower lobe of the left lung was drawn into view. It was bleeding, perforated, lacerated and contained a hæmatoma. I then ligated the lower portion of the lower lobe treating it as if it were a single bleeding vessel. About one and one-half square inches of lung were thus removed. Before closing the wound in the chest, patient was rolled on his belly to remove all blood. A gauze drain was left in the pleural cavity. Thorax muscles were united with silk, skin with silkworm gut. A gut needle was used for sewing the heart muscle. Duration of operation was 55 minutes. No stimulants were given except a hypodermoclysis of physiological saline solution, 250 c.c. in amount, just before the operation.

When the patient was put to bed his pulse was 100, his respirations 28, and his temperature 99.2° per rectum. He complained of severe pain over region of the heart. The temperature rose and the pulse and respirations became rapidly more frequent. The highest point was reached the next morning at 3:00 a. m. January 19th, temperature being 103.4°, respirations 36, pulse 152.

January 20th, temperature was 101.8°, rectal, respirations 30, pulse 128. Severe heart pain continued. At 6:00 p. m. patient got out of bed when not watched and walked sixty feet.

January 21st, drain was removed. Three ounces of a bloody fluid ran from chest on rolling patient on his side.

January 22d. A systolic murmur was heard over base of heart.

February 13th. Heart murmur no longer audible, chest wound entirely closed.

March 3d. He was discharged from hospital with pulse of 84, respirations 18, temperature 98.6°. His condition was good.

May 4th. Patient's temperature rose to 104°. A physician had introduced a needle into the chest at the mid-axillary line, left side, for diagnosis of empyema.

May 5th. I saw patient and found two sinuses in the line of the original incision. I forced my finger into the upper sinus and broke into

a cavity, from which escaped about five ounces of bloody fluid and some black clots, evidently caused by the exploration needle. I introduced a rubber tube for two days, and patient then made a permanent recovery.

A similar case has been reported by R. Goebell, in the 79th volume of *Archiv. fuer Chirurgie,* page 1106: Mr. M. H., age 23 years, shot himself on June 21, 1905, at 10 p. m. When seen patient was pale and anæmic. A gunshot wound was in the left third intercostal space two cm. external to sternal border. In the vicinity of the wound there was a slight emphysema, and bubbles came from the wound. The area of heart dullness had been replaced by one of tympanitic character. Heart sounds were clear, with a singular ringing, melodious extraneous murmur. The abdomen was soft and not sensitive. During the examination the pulse became rapidly weaker and irregular. The pallor increased.

The diagnosis was gunshot wound of heart and of lung. He made a horizontal U incision. The margin of the lung was found perforated. The perforation was closed with catgut. The left ventricle was found perforated 2 cm. beneath the horizontal portion of the coronary artery. The anterior ventricular wound was closed with four catgut sutures, the posterior with five.

There was much blood in the pleural cavity and about 100 c.cm. in the pericardium. A drain was left in pleural cavity. Patient was discharged cured on August 10th.

This case is similar to mine in that both heart and left lung had been injured. The left ventricle had been perforated, while in my case it had been lacerated.

Metropolitan Building.

SOME RESULTS WITH THE WASSERMANN REACTION FOR THE SERUM DIAGNOSIS OF SYPHILIS.*

By John W. Marchildon, M. D., St. Louis, Mo.

Syphilis, by the variety of its manifestations and because of its transference from parent to offspring, was early recognized as a disease of the blood and numerous attempts were made to find out if there was not some substance in the blood serum of syphilitics, which might distinguish it from other infectious diseases of its class. The earlier studies were made upon the cellular elements of the blood, and cells were described which were thought to be peculiar to syphilis. Numerous bacteria have been found and proved of no importance; the variations in number of white and red blood corpuscles, and their morphological changes have been attributed to the disease. The quantitative changes in hemoglobin, the alkalinity of syphilitic blood serum, the amount of albumen, and the freezing point of the serum were all determined without any practical value.

With the discovery of the presence in blood sera of agglutinins, hemolysins and precipitins, these substances were studied in syphilitic sera and it was found that luetic serum was practically the same as normal serum in its agglutinating, hemolytic, and precipitating properties.

After the discovery of the cause of syphilis, in late years, spirocæta were found (Raubetschek) in the blood serum but so sparingly as to be of no diagnostic value.

Other scientists studied the serum from the chemical, physical and physiological point of view, and to this class belongs our present Wassermann reaction for the serum diagnosis of syphilis.

From the advent of the demonstration of antibodies in the blood serum came our present new era of serum diagnosis, developed largely from the study of syphilitic sera. This serum diagnostic test, as first given to the scientific world by Wassermann, was so very complicated that it could not be made in small laboratories, and the practitioners were not able to use it. This technic I have described elsewhere in detail.†

The reaction is made by mixing serum from the patient with extract of syphilitic liver and fresh guinea pig serum, and let stand 30 minutes in an incubator. Then a hemolytic serum and red blood corpucles are added. Now most all of these substances degenerate; they will not

*Read in the Medical Section, Fifty-second Annual Meeting, Missouri State Medical Association, Jefferson City, May, 1909.

†Theory, Technic, and Practical Results of the Reaction for the Serum Diagnosis of Syphilis. St. Louis Medical Review, Nov., 1908.

keep, and since their dosage is determined with difficulty, the making of the test must be painstaking and laborious. It is to be desired that all the materials used in the reaction be made stable, if the test is to be more widely used. I have found that alcoholic extracts of syphilitic liver are just as good as the watery extracts previously used and that they will keep.*

It was known that human hemolytic serum keeps well on ice, and that it could be used with the red blood corpuscles of the patient; this made the test more practical.

The guinea pig's serum used for the complement, is very easily destroyed at room temperature, and it has been the rule to kill a guinea pig to get fresh serum every time the test was made. Noguchi of New York, has modified the test by soaking filter paper in guinea pig serum and drying it in cold air. These slips of paper degenerate also and are not reliable.

During the past year, Mr. L. H. Shackell, of the Physiology Department in St. Louis University, and myself have applied his method of freezing and drying substances in a vacuum, in preparing and preserving the materials used in making the Wassermann reaction. A preliminary report of our work will be published soon. Suffice it to say, we have prepared guinea pig complement in powdered form. All that is necessary is to add this powder to a definite amount of physiological salt solution, and you have fresh guinea pig complement. This powder will keep, as far as we know, at least for months. We trust we shall have made the technic of the serum diagnosis of syphilis simpler, thus making it more available for the smaller laboratories and the profession.

I have classified my cases as regards results with the Wassermann reaction for syphilis, as follows:

(a) Cases showing signs and symptoms of manifest syphilis and giving a positive serum reaction.

(b) Cases showing no signs or symptoms of syphilis and giving a positive serum reaction.

(c) Cases showing signs and symptoms of syphilis and giving a negative serum reaction.

(d) Cases showing no signs and symptoms of syphilis and giving a negative serum reaction.

Of the cases with symptoms present, and diagnosed by the clinician as syphilis, there were 103, and all gave a positive reaction. It is true that in manifest lues, the reaction is practically always positive.

Of patients showing no signs nor symptoms of syphilis at the time of examination, there were 41 which gave a positive reaction.

In these cases there was a definite history of syphilitic infection and, in many cases, of apparent good treatment. It is still a question as to what we shall do when we get a patient who has had syphilis and has

*A Comparison of Alcoholic and Watery Extracts in the Serum Diagnosis of Syphilis. Jour. A. M. A., Dec. 19, 1908.

apparently been well treated and who has no signs or symptoms of syphilis since infected, and yet a positive reaction is given. I have always left it to the clinician to decide and to judge whether or not such patients should receive mercurial treatment. Treatment was begun in all these cases, ten patients having been re-examined after a period of three months mercurial treatment; and all gave a negative reaction.

I have never had a patient who gave a positive reaction with no history nor symptoms of syphilis being present. I have never had a syphilitic blood serum giving a positive reaction but that it would disappear under mercurial treatment and become negative. There are non-syphilitic blood sera which give a positive reaction. These I refered to last year (Journal A. M. A. Dec. 14, 1908) and having no bearing upon the practical value of this test.

There were two cases with symptoms of syphilis present which gave a negative serum reaction. In the first case spirochæta-pallida were found in the ulcer on the penis. A week later a positive reaction was obtained and the patient was at once treated for syphilis. The second case was a young woman with a healing ulcer on the lip. A negative reaction was given and a few weeks later a secondary eruption appeared.

In patients which showed no symptoms of syphilis at the time of examination and giving a negative serum reaction, I have had 61. Of these 34 were non-syphilitic and 27 were cases giving a history of syphilis and having received mercurial treatment. The non-syphilitic cases were patients with other diseases than syphilis, or were normal healthy individuals. None gave a positive reaction.

The cases having had syphilis and giving a negative serum reaction had all been repeatedly treated by the clinician. None had received any mercury for a period of from three months to several years.

The value of the Wassermann reaction to the clinician: My work upon serum diagnosis has shown that the reaction is of great diagnostic value when taken in conjunction with the clinician's findings and the history of the patient. There are always cases which are problems for the physician, and in these laboratory findings are especially desired. In the diagnosis of syphilis, as in all diseases, we need all the information possible. There must be team work between the clinician and the laboratory man. All laboratory diagnosis is only of relative value. Even a histological diagnosis of carcinoma may be wrong, and likewise the clinician may be entirely wrong in his history and physical findings of the case.

However, the patients that have been referred to me for a serum examination have been almost every one, cases where the diagnosis was in doubt. And in many instances the reaction has cleared up the doubt or confirmed a diagnosis previously made.

A case of especial interest that I have had was referred by Doctors Engman and Fuchs. The patient was a young man with a tumor of the

clavicle following spontaneous fracture, and looked very much like a sarcoma. The clinical diagnosis of probable syphilis was confirmed by a positive serum reaction, and the tumor cleared up under mercurial treatment.

Another doubtful case was a man of 40 years, belonging to Dr. W. W. Graves, complaining of severe pain in the head. The patient was a miner and had advanced arterio-sclerosis and ulceration of the tonsil and palate to slight degree. A negative serum reaction was given, and later a histological examination of the tonsil showed carcinoma.

A woman, with obscure nervous symptoms, under the care of Doctors Gayler and Unterberg, with no history nor findings of lues, gave a positive serum reaction. A more careful search led to the diagnosis of tabes.

A young woman with reddened vocal cords and obscure throat findings, in the care of Dr. H. W. Loeb, gave a positive reaction and confirmed the diagnosis of syphilis. I have had a large number of these throat cases where a positive reaction has established a diagnosis of syphilis and in others a negative serum reaction has pointed to some other condition as a cause.

A boy of 7 years, at the St. Louis Skin and Cancer Hospital, service of Dr. Engman, was one of those obscure cases, the diagnosis of which lay between a congenital syphilis, with small multiple disseminate gummata, and tuberculosis, with multiple lesions over the skin, which are called by skin pathologists tuberculides. There were no general symptoms of either disease. The boy, with the exception of the small ulcerative lesions scattered over the integument, was perfectly healthy. In this case a plus reaction was given, and the lesions rapidly healed under mixed treatment.

I could refer to many more cases where the serum examination for syphilis was of great moment. Although the literature concerning this test has been very largely read, and although many know its value, the test has not yet been used by the profession. I trust this valuable diagnostic assistance will eventually come into broader use, as no disease is more fatal and far-reaching in its effects upon the human race. This serum reaction is the only known method by which the insiduous nature and subtle disposition of syphilis can be exposed.

DISCUSSION.

Dr. W. W. Graves, St. Louis: I have made use of Dr. Marchildon's technic and with most gratifying results in my cases. It is a confirmatory aid and in that sense it should be employed. Recently a case at the City Hospital presented some nervous symptoms and a diffuse multilocular thickening of the bones was present. A diagnosis of Paget's disease had been made. There was a peculiar cachexia, arteriosclerosis and some slight alteration of the reflexes and unequal pupils. There was a negative syphilitic history, but syphilis was suspected; Wassermann's reaction was

positive and under specific treatment the condition disappeared. In a case of brain tumor Wassermann's reaction was negative. The patient did have a brain tumor but it was not a gumma. Anything that will aid in the diagnosis of syphilis should be made use of. It is not sufficient for the physician to get a history of a former chancre or sore in making a diagnosis of syphilis. I regard it as a most valuable aid, but on this alone I would not make the diagnosis.

Dr. Guthrie McConnell, St. Louis: The report referred to by Dr. Grindon as having been published in the *Journal* of the American Medical Association, was by Simons, of Baltimore. This Wassermann reaction is one of the few that have so far been shown to be very accurate. In none of them has the same good results been obtained as when the true Wassermann reaction is used, in which you have the syphilitic extract. In regard to the reaction with cancer, Dr. Simons' findings have not been substantiated by other observers. An example is the case Dr. Marchildon has referred to, where syphilis was suspected; the reaction was negative and it was found to be cancer. I think where the technic is carried out by one capable of doing it, that the Wassermann reaction is positive in about 90 per cent. of the cases. The occasional reaction in other conditions is not such as to cause confusion.

Dr. Marchildon, in closing: As to the use of extract of cancer in the place of extract of syphilitic liver or other extracts, it is true these extracts of cancer will sometimes give the reaction, combining with the amboceptor of syphilitic serum and sometimes they will combine with the amboceptor of normal serum and sometimes they do not combine at all. Sometimes extracts of organs other than the liver may be used in making a test for syphilis, but the reaction is not given so readily. No single extract will give a positive reaction with 100 per cent. of syphilitic sera, but it will give a percentage up to 90 or more, so that a good extract is one that will give a reaction with as large a number of syphilitic sera as possible. Serum reaction in syphilis has come to stay.

ACUTE PERFORATIVE APPENDICITIS WITH RECOVERY. REPORT OF A CASE ESPECIALLY AGGRAVATED.

By H. C. Crowell, M. D., Kansas City, Mo.

The following case presents features which we feel warranted in reporting, as by so doing we hope to encourage prompt action on the part of others having a similar case.

Case: Boy, 15 years of age, well, up to 11 o'clock, January 10th, when he went out to skate. On jumping a small stream he was seized with a severe pain and returned to the house. The pain not abating the family physician was called who gave him a dose of morphine and ordered salts. At this time there was no elevation of temperature, increased pulse rate, or evidence of localizable disease. He passed a fairly comfortable night, taking, during the night, several doses of salts. The next morning it was reported that the boy was not much improved and had had no bowel movement. The physician, thereupon suspecting impaction or obstruction of the bowel, called in consultation a brother practitioner and visited the boy. They found a temperature of 100° and pulse of 110, some nausea and increasing tenderness spreading over the abdomen.

Believing from the symptoms—nausea, tympany and an increasing pulse rate—that they had a case of impaction to deal with, they deemed it best to add castor oil to the salts, which was several times given by noon. At 3 o'clock the distention was much increased with increase of temperature and pulse rate. Palpation and percussion did not seem to afford information, of an undoubted nature.

A telephone message at this time, advised me that a case of acute obstruction would be at Wesley Hospital at 7:30 or 8 p. m. for operation.

At 7:30, January 11th, patient entered the hospital and was taken directly to the operating room, where I first examined him, in the presence of his two physicians and others. Temperature 102°, pulse 130, respiration 40, abdomen very much distended, percussion gave slight dullness over right flank. Unable to detect any great disparity in rigidity of the two recti muscles. Boy complained of paroxysms of pain and great distress in breathing. Urine was drawn as he was unable to void it voluntarily.

Patient was given ether and a small incision was made in the median line. As soon as the peritoneal cavity was entered a stream of seropurulent material gushed out, which we sopped up for some time, hoping we might find a walled in space, but soon it was apparent that this fluid filled the entire peritoneal cavity; hence, the incision was enlarged. Fluid sponged away as much as practicable and the appendix

brought into view. This was perforated to the size of a pencil, not bound down, but stood up rather erect.

There was some recent lymph deposit on the cecum and ileum. The appendix was removed and the stump or aperture in the cecum closed with linen. The appendix presented a perforation the size of a lead pencil. The peritoneal cavity was then thoroughly irrigated with salt sol., every fossa and knuckle of gut being thoroughly washed. This being done wick drains, five in all, were introduced, one going over to the splenic flexure, one up under the liver, one to the left iliac fossa, one through an incision in the back and one down to the right iliac fossa and out over the appendix region. Just enough silkworm gut sutures were inserted to hold the intestines in for the time being.

At the conclusion of the operation the pulse was 145. At 9 p. m. patient was placed in the Fowler position and kept there by a sheet folded and fastened to the head of the bed, thus forming a sling which kept him from slipping down flat. The drop proctoclysis was begun at once and continued till early the following morning, and later repeated. He also received ⅛ gr. morphine and 1-40 gr. strychnine every three hours, regularly for five days.

At 12 o'clock after the operation, we found patient comfortable with no cold sweat so indicative of collapse, which all feared must soon appear in this case. Finding this favorable condition, as I was pleased to regard it, I then ventured the opinion, very guardedly, that he had a fighting chance, and as time went on I had no reason to abandon hope, though I had little encouragement from those who knew of the case or the literature.

At 3:30 a. m. his pulse was down to 110, temperature 100. After this his highest pulse was 124 and that for but a short time. In ten days he was practically normal. On the second and third day he had quite a distention of the stomach, which was washed out three times. After washing out the stomach we introduced a cup of eggnog through the tube. In three days two of the wick drains were removed. Two days later all but the back drain were removed. On the tenth day he was out in a wheel chair in the halls and on the porch. Fifteen days after the first operation the wound was closed permanently. At this time all adhesions of intestines to the wound edges and to each other were separated. The appendix wound seemed to be perfect and presented only a slight dimple where it had been. Three days later a fecal discharge, or what looked more like bile, both the light yellow and the heavy brown, came through the upper part of the wound; too high to be from the appendix and was probably the contents of the upper intestine. What should cause the fistula we are unable to understand. It, however, in no way hindered the little fellow from gaining in flesh and enjoying his stay in the hospital, where he received excellent attention, which contributed largely to his uninterrupted recovery.

There are several features in the case that are worthy of further

consideration, in an effort to reach a final analysis, which shall serve to establish principles which may govern us in like cases.

The first natural question which you ask is, why was the diagnosis of appendicitis not made in the early history? In answer to this, we must recall that the pain was disseminated throughout the abdomen: there was no temperature at first, no increased pulse rate, which, taken in a case with no previous history, was not indicative of appendicitis, but pointed more to a possible obstruction.

The second day symptoms, with slight rise of temperature and pulse rate, with vomiting and gaseous distention, with no bowel movement notwithstanding strenuous efforts were made to secure such by the free use of salts and oil, led to the conclusion that it was a case of obstruction. Subsequent developments demonstrated the error of conclusion and treatment, as it was evident that the bowel contents were more effectually forced into the peritoneal cavity by the cathartics.

While the treatment which was instituted here is quite universal, this case served as an object lesson—to be slow in giving cathartics before a diagnosis is made. In either case, appendicitis or obstruction, they were contraindicated. While constipation is frequently associated with appendicitis, it is more marked in obstruction and in this case led to the conclusion that this was the condition under observation, a not infrequent or unpardonable error.

Acute peritonitis may often be mistaken for intestinal obstruction and indeed in this case the only explanation we have for the lack of action of the bowel was an inflamed state of the peritoneum, producing a paralysis as a result of the infection. The temperature and pulse in this case added nothing in way of diagnosis. The most significant feature was the sudden seizure, intense pain, and shock, an increasing tympany, on the second day, leading to the conclusion that it was obstruction. The operation revealed no obstructive lesions aside from the beginning peritonitis, but a perforated appendix, which is deemed the most fatal form we have to deal with when acute, as this one was, with no walling off.

Greig Smith says of this form of appendicitis: "The most fatal with no premonitory symptoms or they are of short duration, and of uncertain import.

"The first real sign is severe pain in the abdomen, rapidly followed by collapse and other signs of diffuse peritonitis. * * * Vomiting sets in and the abdomen becomes rapidly distended, the respiration is quickened and labored. The pain is rarely located in the right iliac fossa but radiates all over the abdomen." Such was our case.

Smith further says: *"I have never known a case of true fulminating appendicular perforation to recover.* * * * Of the few that did recover one-third ought to be placed in the category of diffusion of periappendicular abscess, one-third were not truly general, and one-third slow onset of symptoms proved slow extravasation, rather than sudden diffusion. * * * *No other perforation of hollow viscera is to be com-*

pared in the virulence of its sequences with sudden appendicular perforation. * * * The patient seems doomed almost from the hour of the accident. * * * The number of cases is small." In view of the acknowledged gravity of these cases we incline to a feeling of exultation in the result which we obtained.

We are unable to class this case in any of the exceptions which Smith makes as we had a frank perforation in the very beginning with no time for limitation to the outpour of the colicommunis into the free peritoneal cavity.

The next step which may possibly offer an opportunity for discussion was the free flushing or washing with salt solution. Every fossa and knuckle of gut being thoroughly cleaned.

Some have claimed that dry sponging is superior, but in a case with the quantity of infected fluid in all parts of the abdomen as in this case I am positive no other means equals the thorough irrigation.

Following the irrigation five wick drains were inserted, one to each fossa and one through the back, temporary sutures only to hold the intestines in, were inserted. Here again there are those who would claim that the results would have been the same, or better, had we usd no drain. True it is, the drainage was very slight and only watery, as is usual with gauze drain. The drain in the back seemed to drain less than any of them. Personally I should hardly have dared to close that case without drain though just what the drain accomplished I cannot say.

After reviewing the previous steps in treatment we yet feel that no small part of the successful issue in the case was due to the combined effect of other agencies employed, allowing at all times due credit for most excellent care on the part of a faithful nurse.

Immediately after the operation the patient was placed in the Fowler position and maintained there by means of a sling never being allowed to get down flat in the bed as is usual for about half of the time.

The consensus of opinion seems to be that this position faithfully maintained is a life saving measure, particularly in this class of case.

From the first and for five days he had ⅛ gr. of morphine and 1-40 gr. of strychnia every three hours, which kept him tranquil and I believe facilitated recovery. The strychnia served to maintain the motility of the stomach and heart muscle. Notwithstanding the use of morphine, his bowels moved at 3 p. m. on the second day. One other therapeutic measure employed we believe may be responsible for the recovery of the boy. As we are quite sure failure to employ it has in similar cases and conditions resulted in death. On three occasions in the first three days the stomach became distended and painful with a quickened pulse which in a short time was quite likely to take on the condition now described as "acute dilatation of the stomach;" a speedily fatal condition if not quickly evacuated with the stomach tube, which was done in this case with marked relief with each lavage.

Finally, notwithstanding the fistula which we had, occurring 21 days subsequent to the primary operation, and was more of an annoyance than a menace, we feel highly gratified with the results obtained and especially after noting what Greig Smith has to say of acute perforative appendicitis: *"The most fatal form of perforation we have to deal with."*

212 Rialto Building.

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ADDRESS ALL COMMUNICATIONS TO METROPOLITAN BUILDING, ST. LOUIS, MO.

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E. J. GOODWIN, M. D., Editor.

PUBLICATION COMMITTEE:

Walter B. Dorsett, M. D., Chairman. M. B. Clopton, M. D. M. C. Shelton, M. D.

EDITORIAL

THE SPIRIT OF ORGANIZATION.

What medicine is to-day in its relation to questions pertaining to the health of the people, is so widely different to what it was in the past that it may not be amiss to remind the members of the Association that the propaganda of reform, which has reflected such great honor upon the profession and revolutionized the attitude of doctors toward the people and toward each other, emanated from the profession itself; and that such a change could not have been brought about successfully by any other means than through organization. The spirit of organization is a spirit of inquiry, an uplifting spirit, seeking a change in existing conditions because the reactionary influences flowing from their operation breed depravation of individual and communal well-being. This was the spirit which excited the profound realization that many of the practices prevalent in the profession, and in pursuits correlated with the practice of medicine, were directly, and by reason of their reactive influences, subversive of individual and communal uplift; prompted the reorganization of the American medical and State medical associations; and impelled the application of corrective measures for the elimination of these abusive practices.

The very promptitude of reform in the forces which were operating to quench the spirit of progressiveness that should at all times prevail in the medical profession, was an acknowledgment of reprehensible conduct in pursuits correlated with the practice of medicine, and also in the behavior of many members of the profession; and the correction of such re-

tardatory influences, not to be accomplished by any other means, was alone justificative of the reorganization of the profession and the correlation of its forces. Yet the elimination of the retrogressive factors which were in the beginning the principal objects of attack, represents only a small part of the remarkable change that has taken place both in and out of the profession, for with the growth of the spirit of organization many opportunities were presented for extending medical knowledge into avenues hitherto closed to its enlightening influence because of the lethargy of the physicians themselves.

In the few short years that have elapsed since the awakening, not only have we emerged from the darkness of former days, when the gatherings of medical men were barren of reactionary influences for individual and communal uplift, but we have also apprehended the universality of medicine and have seen its teachings appertaining to the preservation of life and the prevention of sickness accepted and applied in all phases of life, individual and communal, with such reactive benefit to individual, state and nation that there is a constant appeal for more knowledge. The most striking example of this tendency is, perhaps, the campaign against tuberculosis. Started twenty-five years ago by Dr. Edward L. Trudeau the theory was in the beginning ridiculed by thoughtful people and scornfully ignored by doctors. In spite of this cold reception of his beliefs Dr. Trudeau continued in his work, and gradually the truth of his teachings spread and was accepted until, in 1904, the National Association for the Study and Prevention of Tuberculosis was formed by the American Medical Association; and the nation-wide war against the king of destroyers was on. To those who were familiar with the work the ultimate triumph of the principles underlying the new method of treating this disease was never in doubt; and now comes official confirmation of the victory predicted by them, since the latest bulletins issued by Dr. Cressy L. Wilbur, chief of the department of vital statistics of the United States census bureau, contain the encouraging news that the death rate from tuberculosis for the year 1908 shows an appreciable decrease from the rate for the year 1907, notwithstanding that the total number of deaths from tuberculosis in all its forms was larger in 1908 than in 1907. Now, while these statistics speak loud for the continuation of the fight against this disease, it should not be forgotten that the dissemination of knowledge of how to control the ravages of tuberculosis and prevent its spread, has enlightened millions of people, not only as to the means and methods of protecting themselves against infection by this particular disease, but, through the knowledge thus gained, they have also been taught that cleanliness and hygienic surroundings are potent weapons of defense in warding off attacks of other maladies.

While the greatest triumps of organized medicine have been witnessed in the control and prevention of disease—is not cholera but a memory, yellow fever practically non-existent and diphtheria rapidly succumbing to antitoxin?—the science of medicine has not been remiss in stimulating sane and sound methods in the endeavors of those who undertake to correct the faults in our social economy that hinder progress in our development; and nowadays the doctor steps across the line that separates his purely professional work from correlated pursuits more frequently than ever before and joins with the educator, the minister and the social worker in a united effort to lighten some of the burdens that mankind has loaded upon itself through ignorance, error and unbelief.

A secondary action, occurring not alone but as a concomitancy of organization, is the uplift that has taken place within the profession. This is a perfectly natural sequence to changes effected in the spirit of organization, since the things set in motion by the organization, reacting upon the organization itself, have raised the standard of medicine to a far higher plane than it ever occupied before; and to-day the physician who is known and recognized as an earnest supporter of his county, state and national organizations, compels a degree of respect and confidence that is denied one who does not affiliate with these workers in his profession. Such a distinction between the progressive and the unprogressive doctor is forced upon the minds of observing laymen, who know that men associated with medical organizations exhibit a sensitive receptivity to every new advancement in our knowledge and methods of controlling disease. This attitude of the public toward organized medicine is being emphasized daily and is observed not only in private life, when the choice of a physician becomes a matter of moment, but is manifest also in industrial pursuits when the success of the industry depends to any considerable degree upon the counsel and technical knowledge of a regularly associated medical adviser. Life insurance companies are the most conspicuous example of this tendency and here we find that almost all, if not quite all, life insurance companies of national importance select examiners from among the members of local and state medical associations.

The reorganization of the medical profession has already been the source of a far greater amount of good to the doctor and to the people than even its most enthusiastic supporters thought possible in its inception; and yet we have seen only its earliest fruitage. No doubt in the future many other life-saving discoveries will emanate from this great body of men, whose lives are devoted to the alleviation of suffering, the eradication of disease and the lengthening of life, but the lesson we have learned from what has already been accomplished is enough to inspire us to foster unceasingly the true spirit of organization.

ROSTER OF MEMBERS.

In the December issue we shall publish the roster of members of the Association, including in the list only those who have paid their annual dues for 1909 in the local and State societies. Membership in the county society and State association is a matter of very great importance to every physician who seriously wishes to do his share in building the organization and furthering the accomplishment of the many laudable objects for which the Association was organized.

The benefits of membership in the Association are far greater in their value to the practitioner than can be estimated in dollars and cents, and every thoughtful physician who is imbued with a desire to live up to the principles of his profession and support the high purposes for which the organization has been formed, falls short in the performance of his full duty to himself and to his patients if he remains outside of his county society.

"DOCTORS MUST BE GOOD."

Under this caption the St. Joseph (Mo.) *Gazette* comments editorially upon the recent action of the State Board of Health in suspending the license of a physician who had prostituted his professional privileges by peddling whiskey prescriptions indiscriminately. The offense was a flagrant one, in so far as the physician had repeatedly received warning of his misdemeanors by arrests and fines on the part of the local authorities; but despite the punishments, his record shows no diminution in the number of prescriptions for whiskey which he continued to write, as no doubt the business was profitable and the fines insignificant, since he issued as many as 2,000 whiskey prescriptions in one month. The writer of the editorial referred to, exhibits an illuminating perception of the responsibility of physicians and the limitation of the privileges conferred by license to practice medicine. The clarity of his utterances comes as an encouraging variation from the fuliginous dissertations usually offered in newspaper comments anent medical practice and its relation to the public. The Board suspended the physician's license for a period of fifteen years, which prompts the *Gazette* to say:

> **"During that period it is hoped the doctor will have ample time to reflect upon the value of a physician's license. The action of the state board in this case may seem a little drastic, but it is not. The offender was a notorious one. He not only violated the law but did it openly and persistently, in the very face of frequent warnings. Indeed, he had been arrested, convicted and fined by the criminal authorities of the county in which he resided, but without permanent results to his betterment. The board was forced to do something and it acted wisely in letting it be understood that it stands for the rigid enforcement of the laws."**

It now remains for the local authorities of Boone county, in which county the offense was committed, and for the Boone County Medical So-

ciety, to see to it that this offender against the laws of the State and the tenets of the medical profession, shall not violate the restrictions placed upon him, during the period of suspension of his license to practice, by any condonation on their part should an attempt be made by him to engage in the practice of his profession.

OBJECTIONABLE MEDICAL PUBLICITY IN THE LAY PRESS.

In view of the fact that the publication in the lay press of items laudatory of the personal achievements of physicians in the treatment of their patients, and of articles descriptive of successful surgical procedures, is a violation of the principles of the ethics of our profession and is, furthermore, a debasement of the dignity that should at all times attach to the practice of medicine, the JOURNAL will in future devote a column to the reproduction of paragraphs and items from newspapers that physicians, whether members of the local society or not, permit to be printed in exploitation of their skill and superior abilities or descriptive of operative successes in the treatment of their patients. This information will be published for the special benefit of the censors of the county societies, who should take cognizance of the matter and require an explanation from the physicians named in the articles. County society secretaries are requested to send marked copies of papers containing objectionable items of this character to the editor of the JOURNAL.

STATE CONFERENCE OF CHARITIES AND CORRECTION.

The Missouri State Conference of Charities and Correction will meet in Farmington, Mo., November 4, 5 and 6. Mr. M. P. Cayce, president, will read an address on the subject of "What is Needed for a Higher Standard in Our Institutions?" Other papers on the program are: "Civil Service in State Institutions," by Dr. M. A. Bliss, of St. Louis; "Defective Children," by Dr. James Stewart, medical supervisor of public schools, St. Louis; "Delinquent Children," by Mr. Roger N. Baldwin; "Street Trades," by Father Dunne, of St. Louis; "Private Charities," by Mr. Philip N. Seman; "Education of the Insane," by Dr. G. Wilse Robinson, of Kansas City; "The State Campaign Against Tuberculosis," by Dr. O. H. Brown, of Mt. Vernon, Mo. Gov. Hadley will also deliver an address, and the Rev. Dr. W. C. Bitting and Mr. W. C. Graves, secretary of the Illinois Board of Charities, have been invited to speak.

EDITORIAL NOTES

THE Mississippi Valley Medical Association held its 25th annual meeting in St. Louis, October 12, 13, 14. The session was probably one of the most delightful in the history of the organization, both from the standpoint of the number of instructive papers read and the pleasurable social features prepared by the local committee of arrangements. The attendance was large and almost all the states in the Mississippi Valley were represented, while invited guests from the east and west coasts added greatly to the interest in the meeting. The program contained many papers of a classical nature in both the medical and the surgical sections, and to emphasize a few of them does not detract from the excellence of the others. Prominent among those which created the greatest interest among the members was the symposium on exophthalmic goitre, with papers by Drs. Beebe, of New York; Ochsner, of Chicago; Crile, of Cleveland; Jacobson, of Toledo, and Kanavel and Pollock, of Chicago. Pellagra and hookworm disease, two subjects that have come prominently before the profession and the public through recent investigation and study, aroused almost an equal amount of attention. Pellagra was described by Dr. C. H. Lavender, Past Assistant Surgeon United States Public Health and Marine Hospital Service, and Dr. J. J. Watson, of Columbia, S. C., the latter presenting some patients. Hookworm disease formed the subject of an address by Dr. C. W. Stiles, of Washington, D. C.

The Association very properly endorsed Dr. Wiley, the government chemist, in his fight against the adulteration of food stuffs, and condemned the use of boric acid and benzoate of soda as preservatives.

The officers elected for the ensuing year are: President, Dr. Frank P. Norbury, Kankakee, Ill.; first vice-president, Dr. Geo. W. Cale, chief surgeon Frisco Railroad, St. Louis; secretary, Dr. H. E. Tuley, Louisville, Ky., re-elected. Detroit was chosen to entertain the Association in 1910.

THE Annual Meeting of the Missouri State Nurses' Association, held in St. Louis October 7-8, marked a multiple milestone in the history of the organization. The members congratulated themselves over the recent passage of the bill requiring State registration for trained nurses. The success of this bill is in no small measure due to Miss Forrester, of Kansas City, a graduate of St. Luke's Hospital (St. Louis), President of the Association, who has been indefatigable in arousing public opinion to the necessity of such a measure.

A letter was read from Gov. Hadley asking for a list of names from which he could select five who should constitute an examining board. These have since been appointed, and are: To serve 3 years: Mrs. F. E. S. Smith, Superintendent St. Luke's Hospital, St. Louis; Miss Maud Landis, Levering Hospital, Hannibal. To serve 2 years: Miss Ida Gerding, Lutheran Hospital, St. Louis; Miss C. B. Forrester, University Hospital, Kansas City. To serve 1 year: Miss E. A. Tooser, Springfield. Miss C. B. Forrester, Kansas City, and Miss Anna Love, St. Louis, were re-elected for the ensuing year as President and Secretary, respectively.

New Madrid County Medical Society was reorganized on October 12, 1909, meeting with Dr. T. S. Hollenbeck, at Portageville. Election of officers resulted as follows: Dr. T. S. Hollenbeck, president; Dr. Loyd Diggs, vice-president; Dr. J. E. Corlis, treasurer; Dr. J. H. Timberman, secretary. Committee on by-laws, Dr. W. A. Sibley, Dr. Phillips. Censors, Dr. P. M. Mayfield, Dr. J. A. Atkisson, Dr. R. E. L. Williams. Following members enrolled, in addition to above: Dr. Johnson, Dr. C. S. Blackman, Dr. J. A. Fakes, Dr. Geo. Dawson, Dr. H. A. Killian. Next meeting to be held at office of secretary Monday, October 25th, 1909, at Marston, Mo.

The preliminary report of the Census Commission relative to the second decennial revision of the Classification of the Causes of Death, made by the International Commission in Paris recently, together with the revised list of titles, will be found in Census Bulletin No. 104, which will be published soon and copies will be sent to all of the registration officials of the United States. A new manual of classification will be prepared for the use of the registration offices of the United States as soon as the detailed results of the revision are available, and an effort will be made to bring the revised classification to the attention of every physician and local registrar in the country as an aid to the proper reporting of causes of death.

Dr. Wilbur states that the United States starts at the beginning of a new census decade with the revised classification of causes of death; a revised standard certificate of death, which will be adopted by the American Public Health Association, and put into effect for all of the registration area beginning January 1, 1910; and with new rules and instructions recently formulated by the Director of the Census and promulgated to all reporting offices for the purpose of obtaining more complete and correct transcripts of the deaths now registered.

Medical Supervisor, Indian Service (Field). The United States Civil Service Commission announces an examination on November 24,

1909, to secure eligibles to fill a vacancy in the position of medical supervisor in the Indian field service at $250 a month and expenses.

Applicants must show in their applications that they have had at least three years' experience in medicine since graduation from a reputable medical college, and have had special training and experience in connection with tuberculosis and trachoma.

Applicants should apply either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the board of examiners at the postoffice for application Form 1312.

The Radium Hospital Association, of Bland, Mo., has been organized and incorporated under the benevolent act which allows the incorporation of societies of a benevolent character. The association consists of two classes of members, annual members and life members. An annual member pays five dollars per annum, and life members are those who pay one hundred dollars into the association. Annual members become life members whenever they have paid a sum of one hundred dollars into the treasury. The association has secured a whole block for a hospital site. Excavation has already begun and the corner stone will, in all probability, be laid on Thanksgiving Day. The building, which is to serve for hospital purposes, will be 45x75. The basement will be of concrete with two stories of pressed brick, thus making the building practically three stories high. The building is to be completed by the middle of June next and will cost about $10,000.

Articles Accepted for N. N. R.:

Tannismuth (Heyden Chemical Works).
Digalen (Hoffmann-LaRoche Chemical Works).
Benzosalin (Hoffmann-LaRoche Chemical Works).
Benzosalin Tablets (Hoffmann-LaRoche Chemical Works).
Thephorin (Hoffmann-LaRoche Chemical Works).
Thephorin Tablets (Hoffmann-LaRoche Chemical Works).
Veronal Sodium (Merck & Co.).
Zinc Peroxide Soap (Roessler & Hasslacher Chem. Co.).
Mergal (Riedel & Co.).
Salipyrin (Riedel & Co.).
Perogen Bath (Morgenstern & Co.).
Suprarenalin Inhalant (Armour & Co.).
Bilein (Abbott Alkaloidal Co.).
Bilein Pills—¼ gr., ⅛ gr., and 1-12 gr. (Abbott Alkaloidal Co.).
Iodone Oil (Henry C. Blair Co.).
Iodone Ointment (Henry C. Blair Co.).

COUNTY SOCIETY NOTES

CALDWELL COUNTY MEDICAL SOCIETY.

The Caldwell County Medical Society met in Hamilton, October 27th, the afternoon session being held in the Knights of Pythias hall. The work of the afternoon was the hearing of papers and reports of cases by the physicians and the election of officers. The visiting physicians were accompanied by their wives and a reception was held during the afternoon in honor of these ladies.

There were present, in addition to the local physicians: Drs. S. D. Smith, of Cowgill; B. F. Carr, of Polo; C. L. Woosley, of Braymer; W. S. Shouse and J. E. Gartside, of Kingston; G. W. Goins, O. N. Thompson, C. O. Dewey and O. O. Meredith, of Breckenridge.

The officers elected for the ensuing year were as follows: B. F. Carr, Polo, president; S. D. Smith, Cowgill, vice-president; G. W. Goins, Breckenridge, secretary; C. L. Woosley, Braymer, delegate to the State Association. The next meeting will be held at Kingston in January.

The evening session was held at the Presbyterian church and was an open one, a general invitation having been extended to the public to attend. Dr. C. O. Dewey, of Breckenridge, read a paper on "Some Means of Preventing Tuberculosis." Dr. T. Brown, of Hamilton, who is president of the State Medical Association this year, read an address on "The Public Health, Both National and State." The physicians hold these open meetings in the different towns of the county in order to call the attention of the non-medical public to the simple and most effective means of promoting proper sanitation and healthful living and thus preventing the spread of disease as much as possible.

The session at the church was followed by a banquet in the dining room of the Knights of Pythias hall, which was enjoyed by the physicians and their wives and a few invited guests.

A reception was held in the afternoon at the beautiful and spacious home of Dr. and Mrs. W. H. Aplin on Kingston avenue in honor of the wives of the visiting physicians.

CARTER-SHANNON COUNTY MEDICAL SOCIETY.

The Carter-Shannon County Medical Society met in the office of the secretary, Dr. J. A. Chilton, at Van Buren, with the president, Dr. Wm. Fulton in the chair, the following members being present: Drs. P. D. Gum, Frank Hyde, Wm. Hastler, T. W. Cotton; also Druggist J. T. Loyd.

Dr. Edward Heneschel, of Winona, Mo., was made a member of the society.

Among the interesting subjects discussed, the first was "The Advantages of the County Society." Dr. Cotton led the discussion, enumerating such advantages as that of securing the State Journal, the

post-graduate course, advantages of coming reciprocity between Missouri and other states, which can be obtained only through membership in the societies, protection from damage suits, the advantages obtained from physicians associating together, etc. The subject was also discussed by Drs. Hyde, Gum, and, in fact, all the doctors present.

An interesting case of chronic rheumatism was presented to the society by Dr. Chilton, which was carefully examined by the doctors and freely discussed.

Druggist Loyd, though not a member, talked very interestingly of the druggist's work, showing the close relationship between the work of a doctor and that of a druggist.

The meeting was a success, one that was a benefit to all present.—J. A. Chilton, M. D., Secretary.

CALLAWAY COUNTY MEDICAL SOCIETY.

The Callaway County Medical Society met in its regular session in the circuit court room at three o'clock Thursday afternoon and was attended by many of the physicians of the city and county as well as visitors from other points.

Dr. C. H. Christian, of New Bloomfield, president of the society, was in the chair.

Dr. Joseph Grindon, of St. Louis, was present by invitation and delivered an address on the "Struggle of the Body Against Infection," which was appreciated by the laity as well as the professional part of the audience.

Dr. Sneed, of Jefferson City, gave a talk on "Observations in European Hospitals" that was full of interest.

Dr. J. G. Moore, of Mexico, reported a case of operation for tubercular peritonitis which was of special interest to the doctors.

The following visitors and members were at the meeting: Dr. Grindon, of St. Louis; Dr. Sneed, of Jefferson City; Dr. Moore and Dr. Blanks, of Mexico; Dr. Berry and Dr. Gleason, of Auxvasse; Dr. Christian, of New Bloomfield; Dr. Suggett, of Boydsville; Dr. Roots, of Tebbetts; Drs. Yates, Young, Tony, Owen, Dixon, McCall, Basket and Crews, of Fulton, and the physicians of the State Hospital No. 1.

The presidents of each of the educational institutions were invited to attend the sessions of the society.

Hon. D. H. Harris found it impossible to get away from Jefferson City to keep his appointment to address the society on "Expert Medical Testimony," but sent a paper on the subject.

At 6:30 the regular meeting adjourned to meet at the Fulton Hotel at 8:00 o'clock to partake of a five-course banquet that had been prepared for the members, visitors and a few invited guests. The banquet was elegant in every particular. The menu was elaborate, the service excellent, the company congenial, so that the time slipped by so pleasantly that it was 11:30 before the party left the tables, and it is probable that they would have tarried longer had not one of the guests intimated that the hour was near at hand when the graves were said to yawn and the dead come forth and that would be a bad time for doctors to be abroad.

During the banquet hours with Dr. Christian acting as toastmaster short talks were made by several.

Dr. John J. Rice, in his happy manner, paid a compliment that was

deserved, to the medical profession as a whole and to the high rank that the majority held as a whole and that they should hold, considering the importance of the profession.

Superintendent Wells, of the public schools, spoke of the advantages that he thought would follow if we could have medical inspection of the schools and Drs. Grindon, Moore, McCall and Yates in short talks endorsed what Prof. Wells had said and pointed out advantages that would accrue to the children of the schools and to the state if we could have such inspection. One speaker said it would be easy to interest a legislature and get large appropriations if the health of the hogs, cattle and horses was endangered, but not so easy when it was to protect the health of the children or individauls.

CHARITON COUNTY MEDICAL SOCIETY.

The regular monthly meeting of the Chariton County Medical Society was held in Brunswick, on the second Thursday of October. The members present were: Drs. J. H. P. Baker, G. A. Edwards, Harry Tatum and C. A. Jennings.

Dr. Brummall reported a case of tetanus, produced by a gunshot wound in a young man. The period of incubation was fifteen days. The piece of gun-wadding found in the wound was removed and then the wound was thoroughly curetted. The patient made a good recovery without the use of antitoxin.

Dr. Edwards, discussing Dr. Brummall's case of tetanus, said he thought antitoxin of no value in the treatment of tetanus.

Dr. Tatum reported an interesting case of peritonitis, resulting in abscess of the rectum, in which the patient made a good recovery after an operation. The first symptoms were pain and tenderness over the abdomen and some tympanitis. On April 11th the patient vomited, and this was followed by fever and pain over the right side, later extending over the entire abdomen. The abdomen was distended and very rigid; a mass was palpable at McBurney's point. Hypodermic injections of codein, ¼ gr., were repeated as often as necessary and normal salt solution injected per rectum. At the next visit the doctor found a bulging of the anterior wall of the rectum and discovered an abscess just within the anus. This was opened and the pus discharged.

The next meeting of the society will be held at Salisbury, November 11th.—C. A. Jennings, M. D., Reporter.

LEWIS COUNTY MEDICAL SOCIETY.

The Lewis County Medical Society held an informal meeting at Monticello, September 30, 1909. The following members were present: Drs. J. C. Brown, J. D. Raines, R. B. Schofield, T. F. McGlasson, J. P. Frame, N. O. Owens, C. N. Frame, John Ford, H. W. McKim, Paul F. Cole, Z. P. Knight, W. B. Simpson, Geo. P, Knight, P. W. Jennings.

A committee, composed of Drs. Frame, Ellery, Raines and Knight, was appointed to draft the following resolutions of respect in behalf of the society on the death of our president, Dr. Junius Tompkins, of Canton:

WHEREAS, On the 18th day of September, 1909, Dr. Junius Tompkins, of Canton, Mo., oldest member of the Lewis County Medical Society, after exceeding the Psalmist's allotment of time, became tired of the burdens of this life and laid down to pleasant dreams, therefore be it,

Resolved, That we have lost one of our most faithful members, Lewis county one of its most skillful physicians, society an ornament and humanity a friend. That his life was one unbroken process of labor with a great intellect and a carefully trained mind. He aimed to lengthen human life and relieve pain; and be it further

Resolved, That a memorial page be set aside in the minutes of this Society and a copy of these resolutions be furnished to his bereaved family.

DR. GEO. P. MCKNIGHT, Chairman;
DR. J. P. FRAME,
DR. WM. ELLERY,
DR. J. D. RAINES,
The Committee.

Dr. C. N. Frame, of Ewing, was elected to fill the vacancy caused by the death of Dr. Tompkins.

The next meeting will be held in Monticello, October 19, 1909.—PAUL F. COLE, M. D,. Secretary.

MONITEAU COUNTY MEDICAL SOCIETY.

The Moniteau County Medical Society met in regular quarterly session at California, September 9th. The following members were present: Drs. W. R. Patterson, H. C. Klueber, J. H. Lang, John Inglish, J. B. Norman and H. S. Marsh.

Interesting cases were reported by Drs. Norman, Klueber and Lang.

The scientific part of the program consisted of a paper entitled "Summer Complaints of Children," by Dr. J. H. Lang, and a paper entitled "Individuality of the Physician," by Dr. J. B. Norman. Both were well written, instructive papers and each brought out a large amount of thoughtful discussion.

The next meeting will be held in Tipton on the second Thursday in December.—H. C. FREUDENBERGER, M. D., Secretary.

SHELBY COUNTY MEDICAL SOCIETY.

The Shelby County Medical Society met at Shelbina, October 15th. The regular program was suspended in honor of Dr. L. W. Dallas, who is soon to leave for Texas. Compliments were showered upon Dr. Dallas as a man and physician; his removal will be a great loss to the profession and to the county society, for he was never too busy or tired to attend the meetings and to him more than to anyone else is due the present good condition of the society.

Dr. Carson pleaded for maintaining the highest ideals of the profession and for eliminating the purely commercial.

Dr. Vaughn spoke of the hearty coöperation and good feeling of the profession in the county.

Good talks were also made by Drs. Chapman, Roy, White and Smith.

On resuming the regular program, Dr. Roy read a paper on "Therapeutic Agents," which was good and filled with many practical suggestions which he had found useful. The paper brought out a good discussion by all members.

Dr. Ferguson, of Callaway, was elected a member.

Dr. Dallas made an excellent talk on the benefits derived from strong organization and the county medical society and thanked those present for the complimentary remarks.

Those present were Drs. L. L. Smith, Carson, Pollard, Chapman, Willis, White, Ferguson, Vaughn, Wood and Dallas.—A. M. Wood, M. D., Reporter.

ARTICLES APPROVED BY THE COUNCIL ON PHARMACY AND CHEMISTRY.

SODIUM ICHTHYOL.

A derivative of ichthyol containing sodium instead of ammonium.

Actions, Uses and Dosage.—These are the same as those of ichthyol. Its firmer consistence makes it more suitable for pills. Manufactured by the Ichthyol Co., Hamburg (Merck & Co., New York).

STOVAINE.

Stovaine, $CH_3.C(C_2H_5)\ (O.CO.C_6H_5)CH_2.N.(CT_3)_2.HCl{=}C_{14}H_{22}O_2NCl$, is the hydrochloride of 1-dimethylamino-2-ethyl-2-propanol benzoyl ester.

Actions and Uses.—Stovaine acts as a local anesthetic of about the same power as cocaine, but dilates the blood vessels, whereas cocaine contracts them and exerts a tonic action on the heart. It is only 1/3 to ½ as toxic as cocaine. It is used as a local anesthetic; while most reports are favorable, one case of gangrene has been reported following the use of a 10 per cent. solution. Dosage. —Internally, 0.002 Gm. (1/30 grain) as pill. Locally it may be used in the eye in 4 per cent. solution and applied to other mucous membranes, as in laryngology, in from 5 to 10 per cent. solution. For hypodermic injections for local anesthesia it can be used in 0.75 to 1 per cent. solution. Manufactured by the Poulene Fréres Company, Paris (Walter F. Sykes, New York).

STYPTICAN.

Stypticin, $C_{12}H_{13}O_3N.HCl$, is the hydrochloride of cotarnine, an oxidation product of narcotine, similar to hydrastinine.

Actions and Uses.—Stypticin is a hemostatic, analgesic and uterine sedative. The mechanism of its action is obscure. It has been recommended particularly in functional dysmenorrhea and menorrhagia of puberty and of the climacteric; in subinvolution of the uterus after parturition and abortion, as well as in all profuse uterine hemorrhages; in bleeding from the bladder, from the nose, after extraction of teeth, etc. Dosage.—Internally, 0.05 Gm. (¾ grain) four to five times daily, in sugar-coated tablets or gelatin capsules; or by hypodermic injection (in urgent cases) 2 Cc. of a 10 per cent. solution; externally, as a styptic, pure or in strong solution. Manufactured by E. Merck, Darmstadt (Merck & Co., New York).

STYRACOL.

Styracol, $C_6H_5.CH{:}CH.COO(C_6H_4.OCH_3){=}C_6H_{14}O_3$, is the cinnamic acid ester of guaiacol.

Actions and Uses.—Styracol is an intestinal antiseptic and is claimed to combine the antituberculous actions of guaiacol and cinnamic acid. It is said to liberate in the intestinal canal a larger proportion of its guaiacol (up to 85 per cent.) than other synthetic preparations of that substance. It is recommended for the initial stage of phthisis, chronic enteritis and intestinal disturbances in general, catarrh of the bladder, etc. Dosage.—1 Gm. (15 grains) in powder or tablets. Manufactured by Knoll & Co., Ludwigshafen a. R. and New York.

SUBLAMINE.

Sublamine, $3HgSO_4.8C_2H_4(NH_2)_2$, is a compound of three molecules of mercuric sulphate with eight molecules of ethylenediamine (which see).

Actions and Uses.—Sublamine is a disinfectant, similar to mercuric chloride, over which it has the advantage of being non-irritating, more penetrating and readily soluble. Dosage.—It is used in 1:1,000 solution for skin disinfection and in 1:5,000 to 1:10,000 solutions for irrigations of the bladder, etc. It may be used in syphilis by injection into the gluteal muscles of a 3 or 4 per cent. solution. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

SULPHONAL.

A name applied to Sulphonmethanum, U. S. P. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).